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Some Research Problems in Physical Therapy

Arthur L. Watkins, M.D.

In January 1944, the Baruch Committee on Physical Medicine pointed out that one of the chief needs for proper development of physical medicine was more extensive basic and clinical research in physical medicine. Although basic research is the *sine qua non* of physical medicine's achievement of its proper status as a specialty, it was further recommended that basic and clinical research should go hand in hand. We need not argue further the importance of research, but may turn directly to the record of achievement of recent years.

During the period from 1945 to 1948 there have been over 200 scientific reports published on physical medicine from centers or individuals aided by grants from the Baruch Committee on Physical Medicine. One hundred and thirty-two of these were reports of basic or clinical research, the remainder dealing with rehabilitation and education. The National Foundation for Infantile Paralysis, the United States Navy, the United States Public Health Services, and other similar agencies have also provided grants in aid to foster research. Many teaching centers are continually working on fundamental problems in physical medicine, particularly the Mayo Foundation. In addition to the investigations pursued by physicians closely connected with physical medicine, there remains perhaps the most important group of studies—those done in the physiology and biophysics laboratories. Although information obtained here may not have immediate clinical application, it is important that the clinician keep informed of the latest advances so that the always-present lag between knowledge and application will be minimized.

Heat.—The local application of heat probably is the most commonly used therapeutic procedure in a physical medicine department. Heat is also used even more frequently in the home upon the advice of physicians and probably as frequently again by individuals who employ heat almost instinctively for relief of pain. When reviewing our knowledge of the physiological effects of heat in 1946,[1] reference was made to over 100 articles on heat in three years. Most of this work dealt with the effects of increased temperature on the peripheral circulation. Vasodilatation, particularly of the capillary bed under the influence of increasing temperature, and vasoconstriction with reduction of temperature appear to be well established phenomena. Some increase in venous pressure and lymphatic drainage, unless mechanical blockage is present, appear also to be generally accepted. Blood flow determinations within muscles, however, still await the development of appropriate technics.

In spite of this rather large body of experimental data, the exact effect of diathermy upon circulation is still controversial as indicated by a variety of recent papers on the subject. The de-

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velopment of microwave diathermy has also stimulated reevaluation of increased temperature upon blood flow. Kemp, Paul and Hines[2] measured the blood flow through the femoral artery in experimental animals before and after the application of short wave diathermy and microwave diathermy. They used a bubble flow meter technic which does not allow separate analysis of blood flow in bone, connective tissue, muscle, or other specialized regions supplied by the artery. Although diathermy succeeded in causing a rise in muscle temperature, there was no significant increase of flow in the femoral artery or vein of the treated limb and, in fact, reduction of flow frequently was observed. When muscle temperature was elevated by microwave treatment, blood flow was increased. Wise[3] also studied the effects of diathermy on blood flow, using the venous occlusion plethysmograph. He measured the blood flow in the forearm before and after the application of short wave diathermy and reported consistent evidence of increased blood flow following an application of 10-20 minutes' duration. A group of investigators at the Mayo Clinic repeated similar experiments on normal subjects and animals, employing both air plethysmographic and bubble flow meter methods. Their results showed a consistent increase of blood flow following diathermy sufficient to cause significant increase of deep tissue temperature.[4,5] More recently this same group of investigators have studied the effect of microwave diathermy. Observations were made on 50 normal human subjects, based on significant increases of blood flow and of tissue temperature in all cases. The greatest amount of energy absorbed was on the average in the muscle. After absorption of energy reached a certain point the increase in blood flow was sufficient to remove heat at a greater rate than it accumulated, resulting in a fall of tissue temperature from the peak after a 20-minute exposure.[6] They also have studied the temperatures produced in the tissues of trained animals by short wave diathermy and microwave diathermy. Their results indicated that before heating, the temperature gradient was from within outward: that is, from the warmer muscle to the less warm superficial tissues. After heating with either microwave or short wave diathermy this temperature gradient remained the same, from the superficial muscle layers to the skin. However, in muscles the gradient was reversed from the warmer superficial layers to the less warm deep layers. The differences between the temperatures produced in the deep tissues by microwave or short wave generators were not significant. They did find that higher temperatures were obtained after 20 minutes than after 30 minutes when using microwave, a phenomenon not observed with short wave generators. There appeared to be an adaptation of the organism to the continued application of microwave during treatment, whereas with short wave diathermy there was a more sustained temperature rise.[7] It still remains to be seen whether the differences reported in heating effects from these two types of energy is of clinical significance.

Similar studies were carried out at another clinic to compare the effect of short wave and microwave diathermy on blood flow.[8] These authors concluded that short wave and microwave diathermy were equally effective in increasing local blood flow in normal experimental animals and that loss of motor or sensory innervation did not affect the essential nature of the vascular response to heating, although they felt that the sympathetic outflow in the dog is probably necessary for the typical vascular response to local heating. They concluded that there is no evidence that any known method of heating possesses properties which have any specific effect on blood flow. Studies on this problem of the effect of diathermy on blood flow are continuing and in a recent communication still unpublished evidence has been presented that the differences in the results obtained may perhaps be explained by the fact that when using short wave diathermy there often is a slight increase in temperature of centrally flowing blood which stimulates a generalized vascular response, while at the same time there may be locally some relative vasoconstriction. If there is no central increase in blood temperature, as is usually the case with microwave applications, the local response is more typically one of vasodilatation. We can perhaps conclude that we have available two excellent methods of producing local increases in tissue temperatures with resultant local changes in blood flow and also at times distant effects.

The therapeutic application of a new type of energy such as microwave also presents the possibility of deleterious effects. With this in mind, investigations have been undertaken to study the heating effects of microwave with and without ischemia.[9] As might be expected, burns occurred in the ischemic tissues at temperature levels which were found to be lower than those seen after exposure of tissues with intact circulation in which no burning occurred. Attention also was called to the possibility of overheating in areas of decreased circulation where there is a localized accumulation of tissue fluid and in tissues overlying bony prominences.[9] There is also a theoretical possibility of standing waves within tissues, particularly at distances beneath the surface which have a physical relationship to the wavelength involved and the distance between surface and underlying bones.

If this should prove to be true, concentrated heating effects might be anticipated.

The epiphyseal region of growing bones of children is known to be susceptible to damage from roentgen ray exposure,[10] and with this in mind, an experimental study was pursued to determine the effects of short wave diathermy and microwave diathermy on the epiphyses of growing white rats.[11] The findings indicated that when moderate soft tissue injury was immediately present, following exposure to either short wave or microwave radiation, disturbances in bone growth were noted because of partial or complete epiphyseal destruction. Two clinical cases were also cited in which extensive disturbance in bone growth resulted in children who had received diathermy burns. Accordingly, great caution should be observed in all diathermy treatments, both short wave and microwave, particularly in the region of the epiphyses of long bones in children.[10,11]

Other studies on microwave irradiations in the region of the eye have revealed that a single exposure of rabbit eyes at 5 cm. distance for 15 minutes with a 100 watts power output resulted in cataractous lenticular opacities within 3-9 days.[12] The average temperature of the vitreous at the posterior pole of the lens under these conditions was found to be 55.1 C., while that of the cornea was 49.4 C. Other experiments in which there were repeated exposures of smaller magnitude resulted in opacities after a delay of 2-42 days, whereas more intense irradiation for 20 minutes produced immediate changes. This, of course, indicates the dangers of high dosage of such irradiation when applied to the region of the orbit, in spite of the fact that previous experiments with increases in temperatures more nearly those seen in clinical practice produced no immediate ill effects.[12]

Other deleterious effects of microwaves also have been noted on rabbit testicles.[13] Degeneration occurred following a 10-minute exposure which produced a temperature of 35 C. within the testicle. Infra-red irradiation causes similar histological degeneration but only when applied at a temperature of 40 C. No explanation is given concerning the changes at lower temperatures with microwave, but the warning is given to shield the scrotum against microwave irradiation.[13]

Massage.—Massage is another widely applied physical therapeutic agent. Most of the scientific studies on the physiological effects of massage were done 25-30 years ago and were reviewed in 1945 by Scull.[14] That circulatory effects may be obtained at least peripherally is easily demonstrated. More exact quantitative knowledge has only recently been obtained in studies of the peripheral circulation in normal and diseased extremities by means of the venous occlusion plethysmograph with compensating spirometer recorder.[15] There was found to be no consistent or significant average increase in total blood flow after deep stroking and kneading massage in normal subjects, in those with rheumatoid arthritis, or in those with spastic paralysis. There was, however, definite increase in circulation to extremities of subjects with flaccid paralysis. It was possible, however, to produce significant changes in normal extremities with very vigorous, stimulating massage, but this type of massage was not that which could be used routinely as a therapeutic procedure for treating most patients seen in a department of physical medicine. Massage, of course, has been observed to have definite sedative or relaxing effects when properly administered for this purpose. As yet, however, we have no way of judging quantitatively the effects of various types of massage upon neuromuscular function.

Hydrotherapy.—The whirlpool bath is another common treatment procedure which has only recently been subjected to quantitative evaluation. Using methods previously described, it has been found that the blood flow in normal and diseased extremities immersed in a whirlpool bath at temperatures between 38.6 and 42.5 C. did not differ significantly with or without agitation.[16] The increase in circulation at temperatures of 38.6 was only slight, whereas there was a marked increase of blood flow following immersion of the normal upper extremities at 41-42 C. No attempt, of course, was made in these studies to evaluate other effects of agitation, such as relaxation of muscle spasm or relief of pain.[16]

Electrodiagnosis and Therapy.—As electronic generators have become more generally available for production of low voltage currents of measured duration, testing of nerve muscle excitability beyond that of the simple galvanic and faradic tests has been more widely utilized. Measurements can now be made of the rheobase, chronaxie, or the entire strength-duration curve if desired. Another measurement, that of the galvanic tetanus ratio, has also been advocated as of value. In spite of all these advances in technics of measuring excitability, it appears to me that clinical judgment and experience is still of prime importance, as no single electrical determination can give a true quantitative indication of functional power.[17] Repeated examinations with any one of these quantitative tests which the observer prefers will give information concerning progress during the stage of nerve regeneration and reinnervation of the muscle. One may frequently find, however, that there is rather poor correlation between the elec-

trical status of a muscle and its functional performance.

The value of treatment of denervated muscles by electrical stimulation has been reopened, using new types of stimulators.[18] Of particular interest have been the results claimed with maximal stimulation of denervated muscles by means of pure sine-wave currents of low frequencies corresponding to the excitability of denervated muscles. Experiments have shown that atrophy of denervation cannot be prevented by this means, but if stimulation is given with sufficient intensity to cause a vigorous contraction of the denervated muscle, particularly against a load of optimum resistance, there appears to be more effective return of motor power upon reinnervation. The clinical application of electrical stimulation in patients with poliomyelitis is still subject to further observation, although early reports of such treatment in chronic cases were encouraging.[19]

Electromyography.—The study of electromyography has come more and more into the field of physical medicine. For clinical evaluation of neuromuscular disorders such recordings have been found of value in analysis of tremors such as those in Parkinson's disease and hysteria, and the demonstration of muscular fasciculation in degenerative disease such as progressive muscular atrophy and amyotrophic lateral sclerosis. In cases of peripheral nerve injuries the presence or absence of complete denervation may be detected by this means, also states of partial innervation, thus aiding in prognosis.[20] Similar analyses have been applied with value in patients with poliomyelitis.[21] Other investigators have used this method to study the action of individual muscles during complicated movements, such as those of the hip and shoulder.[22,23] Electromyography is also helpful in evaluating the effects of certain drugs, particularly those aiming to reduce muscle spasm or spasticity.[24] It is expected that this method of examining neuromuscular function will be useful in a variety of future research problems.

Exercise.—Studies on the effects of various aspects of therapeutic exercise are of particular interest to physical therapists. Newer technics of strengthening muscles have recently come into prominence, such as the use of progressive resistance exercises. Attempts have been made to evaluate their effectiveness quantitatively, the results indicating that this method has definite value, particularly in the treatment of weak, atrophied muscles following immobilization, in certain cases of arthritis, poliomyelitis and, to a limited extent, in weakness due to upper motor neuron disease.[25]

Efforts are being made to evaluate more quantitatively the performance of disabled individuals by means of ergography, which should be of considerable practical importance particularly in relation to industrial accidents.[26] The development of more accurate methods of measuring muscle strength manually during a single maximal effort is, as you know, also being attempted.

Closely related to exercise is the problem of fatigue, which has not been solved. Studies have revealed that many variables are involved, including the emotional stability of the patient, his general level of fitness, and also his endocrine status.[27] The dramatic effect of compound E on patients with rheumatoid arthritis brings up the possibility that many of our physical procedures may be evaluated in the future in terms of endocrinological changes.

Another void in our knowledge is that concerning the effects of various physical procedures on patients with psychiatric disorders. Although it has long been known clinically that physical therapy is of value in the treatment program for such patients, the exact role will be determined only by future research efforts. In fact, there appears to be no end to possible research endeavors in this wide field of medical practice, and it seems safe to predict the discovery of important new physical methods of treatment, possibly the use of ultrasonic energy which is now in its infancy, as well as greater effectiveness of currently used physical therapeutic measures as a result of better knowledge of their physiological actions gained by continuing research efforts.

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An Improved Shoulder Wheel

Max K. Newman, M.D., and Elsie Wunderlich

Various mechanical devices are available to encourage motion of the joints of the upper extremity. These include such apparatus as the shoulder wheel and shoulder ladder, pulleys and weights and occupational therapy machines. The shoulder wheel always has been a useful active exercise, mobilizing the shoulder joint, preventing the formation of adhesions, strengthening weak muscles, and providing a more psychological type of exercise for the tight shoulder (be it a disorder of fracture, bursitis, arthritis or neuromuscular type).

We submit for perusal, the illustrated shoulder wheel. The advantages are many: (1) excellent construction makes for easy handling and installation, (2) adjustable in height so that it may be used with children and various sized adults, (3) graduated resistance, (4) adjustable handle to accommodate any arm length, (5) degree markers to permit patient and operator to follow progress and range of motion of the shoulder.

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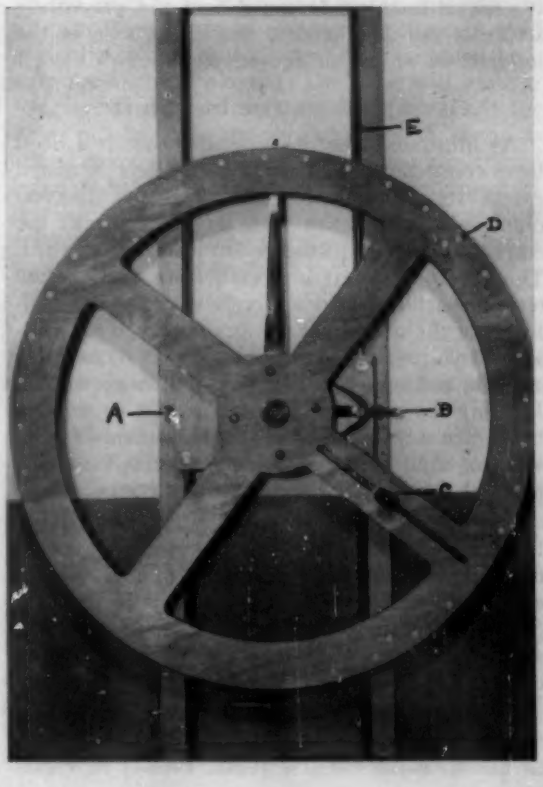

Illustration shows shoulder wheel designed with assistance of M. S. Tougas, Lorain, Ohio. (A) Locking screw for height adjustment. (B) Adjustable resistance screw. (C) Radially adjustable positioning handle. (D) Degree markers. (E) Slide poles for adjusting height of wheel.

A Useful Tool for Testing Electrotherapy Equipment

Robert N. Eubank and Sara Jane Houtz

The efficient operation of physical therapy equipment is essential to the efficient operation of a physical therapy department. This is doubly important when the safety of the patient and the operator are involved. Consideration of the upkeep and safe operation of equipment should be included in a general knowledge of various devices used in physical treatment. A handy screw driver or wrench routinely used to tighten loose hardware may prolong the life of equipment and, thus, its availability for service to the sick. Tools such as these are invaluable for innumerable simple mechanical repairs. The purpose of this paper is to present an equally inexpensive, rugged and convenient instrument, *the neon circuit tester*. This is a useful teaching device; it assists in preventing accidents due to electrical shock and aids in the localization of circuit breakdown.

Description of the Instrument

As illustrated, the neon circuit tester is a neon lamp connected to two wires, completely insulated except for the tips. A resistor, usually 500,000 ohms, placed in series with one wire, limits the current to one milliampere or less at 500 volts. Thus the operator is protected from shock when testing machines carrying high voltage. The brilliancy of the neon light is proportional to the voltage, varying from a minimal glow at 65 volts to a bright red-orange as voltage increases up to 550. In using the neon circuit tester it must be remembered that a machine producing less than 65 volts will not light the lamp. Most machines used in a physical therapy department will deliver 65 volts.

The Neon Circuit Tester as a Teaching Aid—By inserting the contact wires of the neon circuit tester into the patient lead outlets of a D.C. generator only one element will glow. This identifies the *negative* pole. A change of polarity produces a corresponding shift in glow to the opposite element.

The electrical field of high frequency current ionizes the neon gas in the circuit tester and the bulb glows. Thus, this instrument is not only a voltage indicator but also indicates the field surrounding the leads. The neon lamp will glow as the *bulb* end of the tester enters the electrical field in approaching the cable, drum, pads or condenser plates of the short wave diathermy machine. It is possible, therefore, to delimit the fields around the patient circuit. Certain precautionary measures are necessary when using the neon circuit tester in the short wave diathermy field. Because electricity has a tendency to concentrate on metal points, the contact tips of the neon circuit tester must be separated and kept as far out of the diathermy field as the instrument will allow. Avoid touching the uninsulated contact wires of the tester. These are always hot when the field is sufficiently intense to make the bulb glow.

The Neon Circuit Tester in the Prevention of Hazards—Many meters and expensive machines have been damaged by plugging them into main circuit lines of unknown voltage or frequency. The neon circuit tester may be inserted directly into the main line outlet to determine whether the current is direct or alternating. When direct, a single element glows; when alternating, both elements glow.

For the past ten years electricians have stressed polarity of wiring. Modern electrical installations have one outlet wire grounded for safety. The ideal circuit is one in which the grounded wire is consistent from the source of electrical supply through the machine. This includes not only the contact at the conduit but also, as in some machines, the outlet on the cabinet proper. The grounded wire is almost always covered by a white fabric material. Occasionally the wire is designated by a green covering. Red, black or other colored covered wires are considered hot or nongrounded. These colors are universally used for all standard wiring. The hot wire in the main supply conduit is identified simply by inserting one of the uninsulated contact tips of the neon circuit tester into the tap and grounding the other either by holding the tip

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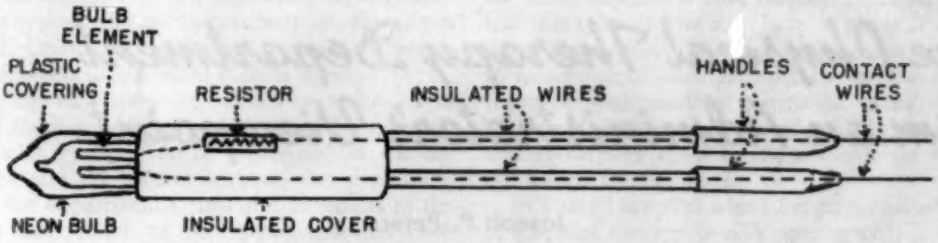

SCHEMATIC DIAGRAM OF A NEON CIRCUIT TESTER, GENERALLY AVAILABLE IN RADIO SHOPS

tightly between the thumb and forefinger, or by touching it to a bare metal water pipe or metal outlet box. The tap that lights is the ungrounded wire.

In general, all electrical equipment should be grounded. To test whether or not an instrument chassis is grounded, firmly attach one lead of the neon circuit tester to the metal cabinet of the machine, turn the instrument on and touch the other contact wire to an unpainted water pipe or radiator. If the neon lamp lights, the metal frame of the machine is not grounded, electricity is leaking from the cabinet, and precautionary measures should be taken.

The failure of a pilot light to glow when using an instrument does not always indicate a faulty circuit. The machine may be operating properly but the pilot light may be burned out. A careful test of the machine circuit, discussed in the following section, will determine whether the instrument is operating.

The Neon Circuit Tester as a Diagnostic Tool in Equipment Breakdown—Repair shops manned by properly informed personnel often are inaccessible to clinics requiring maintenance and servicing of equipment. If the trouble can be located it then may be reported to the proper authorities. The necessary repairs thus may be expedited and loss of operating time reduced. Electrical difficulties may arise in the main line, the machine, or the patient leads. Most failures occur in sources other than the machine proper. If a correctly administered treatment does not produce the desired effects, remove the patient from the circuit. First check the main line supply with the neon circuit tester. If the neon lamp lights when the tester is plugged into the wall socket, test the machine circuit. This is done by inserting the contact wires into the patient outlet terminals when administering direct or low frequency currents, or by placing the neon bulb in the field when using short wave diathermy. Finally, if both the main line and machine circuit light the neon bulb, test the patient leads for an open circuit. Couple the lead to be tested once around a short wave diathermy cable. The lead to be tested must extend at right angles away from the cable. Turn on the short wave machine. The minimal amount of current necessary to produce an electrical field around the cable will suffice. Glide the neon bulb over the lead to be tested. The lamp will glow as long as the wire within the lead is intact. At the point of a break in the wire and beyond, the neon circuit tester light will not glow. Keep all exposed metal parts of both the tester and the lead under test out of the diathermy field. By following these relatively simple steps the source of the difficulty may be rapidly localized.

SUMMARY

A neon circuit tester is described. Its value to the physical therapist may be summarized as follows:

1. The neon circuit tester may be used to demonstrate the short wave diathermy field, to differentiate between D.C. and A.C., designate polarity and indicate relative voltage.
2. This durable instrument, which covers a wide voltage range, tests the operation and grounding of the apparatus.
3. The neon circuit tester expedites localization of defects in the supply, machine or lead circuit thus reducing loss of operating time.
4. The neon circuit tester is useful as a teaching aid and is an asset in preventing damage to patient, operator or instrument.

The Physical Therapy Department from an Administrator's Viewpoint

Joseph P. Peters

Uppermost in the minds of hospital people today is the question: "What must we do to assure the public that they are receiving the best care possible?" To render this care is a noble tradition and an obligation—an obligation which is the very *raison d'etre* of a hospital.

Today, more than ever, as the concepts of what constitute adequate, skilful and responsible medical care are broadening, it would be difficult to overstress the need for a dynamic approach to these trends by all concerned with administrative or professional services within the hospital. In particular, this means that the general hospital of today has an obligation to correlate its aims with the new emphasis that has been placed on rehabilitation and physical therapy. This phase of medicine has been aptly described as the third major responsibility of medical care. As such, it has been elevated to a position side by side with the curative and the preventative.

That the hospital must keep pace with this development is not wishful fancy—it is a very real and apparent goal. From the viewpoint of hospital management, this often demands that the past aims and organization of the physical therapy department be reviewed and augmented—reviewed as to whether this department should broaden its scope of activities and, if need be, augmented so that this may be achieved. Too often in the past, this phase of hospital activity has been relegated to some far corner of the hospital and only "lip service" paid to its actual aims and potentialities. This is mentioned not as a criticism but as a signpost which has been and is being passed on the road along which the contemporary hospital is traveling.

With these trends in mind, it may help us to stand far enough away from the day-by-day details of a physical therapy department to enable us to see it in perspective—and even run the risk of oversimplification by considering some of its basic administrative aspects.

Every department within the hospital—be it a service department or one devoted to the care of patients—presents two fundamental problems from an administrative point of view: (1) The establishment or definition of aims or objectives, and (2) the means of attaining these objectives. The latter constitute the *modus operandi* of the department. Usually these day-by-day procedures overshadow the goal which too often is ephemeral or ill-defined or perhaps temporarily forgotten. Thus the paradox of searching for the route without knowing the destination.

What are the goals of the physical therapy department in a general hospital? Simply defining physical therapy as a specialized part of medical care or listing the modalities to be offered is not enough. Much more is needed. The following check-list will suggest some of the questions that should be considered:

What constitutes an adequate physical therapy service for your particular hospital? Will it be limited to convalescence and treatment of postsurgical patients? Will it be limited to ambulatory patients only or will it start at the bedside? Will treatment continue after the patient leaves the hospital? Will home care be included? Will private out-patients be treated? Will referrals from other institutions or outside physicians be accepted? Will physical therapy be limited to the acutely ill? The chronically ill? Will the physical therapy program be continuous and progressive from bed to job? What physical therapy services are offered by other hospitals and institutions in the community? Will research and development of new procedures be undertaken? Will a teaching program be instituted?

The above are only some of the factors that

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Read before the Physical Therapy Section of the Middle Atlantic Hospital Assembly, May 10, 1949.

should be studied before establishing or augmenting a physical therapy department in any given hospital. Obviously the scope of service depends on the answers to questions such as these.

Once the objectives are defined or redefined in light of modern developments, two problems arise. The first is the selection of a director for the department and the second involves the dissemination of the department's aims and functions to the medical staff. Much of the apathy that has been accorded many excellently staffed and equipped physical therapy departments can be traced to the fact that many physicians simply do not think in terms of physical therapy. To be sure, many orthopedists, neurosurgeons and surgeons realize its worth, but what about the other members of the medical team?

Here is where the proper selection of a director for the department is most important. The physician selected should, wherever possible, have had special training in physical medicine, plus some clinical experience in the field. More than that, however, he must be enthusiastic about his work. Trite though this may appear, enthusiasm and farsightedness are important qualities for this position, as it is one that requires salesmanship. As suggested before, physical therapy needs the active support and understanding of the entire medical staff if all patients requiring such treatment are to receive its maximum benefits. To do this involves more than scientific training and ability. A well-thought-out educational program is important but so is a lot of time and effort. It is common knowledge that much patience and thought is needed to attain even small achievements, simply because education consists of more than merely pressing a button, as one would do to turn on an electric light. Perhaps, some may feel that I am overstressing this whole problem of enlisting the support of the hospital staff. Be that as it may, however, without this support, I do not see how physical therapy can assume its rightful place in the therapeutic picture.

If the hospital has an interne and residency training program, frequent conferences with them are desirable. If at all possible, rotating internships should include an assignment to physical medicine for a portion of the training year, if only for a week or so. The general purpose of such training would be not so much to teach the fundamentals of physical medicine but to acquaint the young physician with its role in the over-all program of medical care.

It may seem redundant to state that trained physical therapists are essential to a hospital physical therapy department, regardless of its size or scope of activity. However, the point is that even the small hospital should employ a qualified physical therapist or else not have a physical therapy department. Small hospital departments may have to make special arrangements to share a physical therapist with another institution. This question of trained personnel is one of primary importance and constitutes an obligation which no hospital can afford to circumvent.

In a small hospital where the physician in charge of physical therapy usually spends only a portion of his time in the department, most of the immediate supervision falls upon the shoulders of the head physical therapist. As a result, she assumes a more active role in acquainting the medical staff with the services available in her department. She may be required to attend hospital departmental meetings. In such a position she may be called upon to make recommendations or suggestions regarding improvements or changes in procedures or standards of service within her department. In making such recommendations to the hospital administration, it will prove helpful to keep the following ideas suggested by a noted management authority in mind:

(1) Explain how and why it is felt the present method is inadequate.
(2) Present the idea in complete detail—think of every angle.
(3) List in detail the advantages and limitations of the idea as compared to the present method.

And finally, sleep on the idea—it may look different in the cold light of dawn!

What about auxiliary personnel? Large departments may require porters, clerks and others. Volunteer workers can be used to advantage in performing various clerical tasks, scheduling appointments, moving patients to and from the department or assisting them with clothes or braces. As a rule, the specialized nature of physical therapy work does not permit treatment by volunteers. However, if properly utilized, such persons can materially aid in conserving the amount of nontechnical work which can too often divert trained personnel. Care should be taken to see that the work scheduled for volunteers is interesting, varied and productive.

Much has been said and written about the planning and arrangement of space and equipment in a physical therapy department. The amount of space and equipment required depends on the size of the hospital, the type of cases treated, and the scope of therapy to be given. Again, the question of aims and functions appears, for each department's physical needs depend to a large extent on what it hopes to accomplish. In general,

however, as most hospitals of 100 beds or over already have physical therapy departments, the space and locations cannot be altered. The most that usually can be accomplished is to rearrange the equipment or redecorate the department. However, even with these limitations, much can be done to create an efficient and pleasant environment. A few buckets of paint and thoughtful rearrangement can work miracles.

For those who are planning new departments or redesigning old ones, the United States Public Health Service has established standards and floor plans for typical departments in various size hospitals. These plans offer some excellent ideas and, with slight modifications to suit the individual needs of a given hospital, many past mistakes can be avoided.*

Many excellent articles have been published regarding minimum requirements in the way of equipment and supplies for a physical therapy department. Notable recent references are the listing of basic requirements plus an article by Isadore Rosenfield and F. Wilson Keller entitled "Planning Rehabilitation Facilities," both of which are in the Reference Section of the Hospital Purchasing File, 1948-1949. In reviewing equipment needs or recommendations, it is wise to follow the rule that purchases be made only when the demand for the item is sufficient to justify the outlay. It is not equipment that makes a physical therapy department—it is properly trained personnel!

Too much emphasis cannot be placed on the proper use and care of equipment, and especially on the safe use of equipment.

Safety should be the keynote in purchasing and in using all equipment and apparatus. The AMA, ACS, and the Underwriters Laboratories have established standards and it is recommended that these be adhered to at all times. However, if it becomes necessary for the hospital's engineering department to build special items, be sure that they are properly designed and constructed according to sound engineering principles. Before using any such apparatus, test it thoroughly. If you have any doubts about any homemade electrical equipment, send it to the Underwriters Laboratory for approval. If additional electrical units are being added in the department, it is a good idea to have an electrician test the circuits to see that they are not being overloaded.

Maintenance and safety go hand in hand. Remember that day-to-day attention to needed repairs is extremely essential. The head physical therapist is normally responsible for checking the equipment. In general, the following procedures are recommended:

(1) Notify proper authorities immediately of any malfunctioning or breakdown of equipment.
(2) See that all employees are properly instructed in the proper care and use of all equipment and supplies. Salesmen often can be of great assistance in this regard.
(3) Insist on proper discipline in using equipment and for safe-keeping of supplies.
(4) Indoctrinate all members of the department in the economical and efficient use of supplies and equipment at all times.

And, above all, see that adhesive tape is not holding broken parts together. A patch-up job often is more dangerous than a broken part, for at least the latter usually is obvious while the patch-up job gives a false sense of security.

Many problems and misunderstandings can be avoided if routine operating policies are formulated and put in writing. These policies are simply guideposts for the daily functioning of the department. Included therein should be definite procedures for the reception, treatment and discharge of patients; also minimum standards regarding records of treament, progress notes, and various reports and analyses of service rendered.

Definite personnel policies are a must. These should be made available to every member of the department so as to prevent misunderstandings in the future. Especially recommended are specific statements in writing regarding vacations, holidays, periodic raises, sick leave and absenteeism, terminal vacations, and other items which are important in any job situation.

Well-defined operational policies must be augmented by sound financial policies. Today—when most hospitals are faced with the stark reality of deficit financing—it is necessary that each department, wherever possible, pay its own way. To accomplish this, rates and charges should be based on the costs of rendering service to the patient.

But—and this is fundamental—this charge to the patient *must not* be a deterrent to good medical care.

Many of the patients needing physical therapy have been financially debilitated due to the costs of relatively long periods of disability. And yet, can any hospital worthy of its name turn away such patients? This question answers itself. In short, financial policies must be geared to the postulate that allowances and adjustments can be arranged whenever such are indicated.

Fortunately, there are some agencies, both voluntary and civic, which are ready to assist in fi-

*Essentials of a Hospital Department—Physical Therapy. Published by American Hospital Association, May 1949.

nancing the care of certain patients. The National Foundation for Infantile Paralysis is a notable example. In the hospital with which I am connected, there have been several cases within the past few months where outstanding results have been obtained in so-called "tough" rehabilitative cases due to the support and encouragement of this organization. True, this assistance is limited to specialized instances; however, one must be realistic enough to picture the additional problems that would exist if this aid were nonexistent.

No department within the hospital operates in a vacuum. Coordination and good interdepartmental relationships at all levels make for better hospital service and teamwork. Conversely, feuding between various groups eventually is detrimental to the patient.

I have already mentioned the importance of obtaining the active support of the medical staff. In addition, the physical therapy department depends on the occupational therapy department, social service, engineering, medical records, housekeeping, nursing service, x-ray and other departments within the hospital for information, assistance and service. Understanding the functions and needs of these groups improves your performance and creates a pleasant environment for everyone.

At this point, it seems wise to consider the potential contributions of physical therapists in the education of student nurses. Recent studies have indicated the importance of teaching body mechanics and posture in nursing. The physical therapists can contribute much by stressing the application of these principles in the activities of nurses and in the care of patients. Much fatigue and many an unnecessary disability can be prevented by such training.

Healthy intramural relationships reflect good patient care. But—the physical therapy department's activities cannot end here. They extend far beyond the walls of the hospital. If the patient and the community are to benefit from your accumulated reservoir of knowledge and technics, the department must integrate its activities with those of other institutions and agencies in the community.

Extramural cooperation is mentioned because I firmly believe that the modern hospital, together with all its departments and services, has an obligation to assure its patients that "no faucet is left untapped" in rendering the *best care possible.* This implies that if one organization cannot do the job the patient be referred to another agency which can help him. In rehabilitation, this is particularly important simply because interest in the patient must persist longer than his confinement in a hospital bed. In many instances all the good work that has been accomplished can be negated if the patient, after leaving the hospital, is left to his own resources in readapting himself to his social and economic environment.

Much of what has been said in this article has been said before—some of it is common knowledge—a few of the ideas are mine—but all of them, I hope, have focused your attention on the importance of sound organizational goals and well defined policies adapted to the individual needs and aims of your department. Then, and only then, can a physical therapy department efficiently render adequate, modern service and keep pace with recent developments in the field of rehabilitation.

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Lower Extremity Amputation:

Its Effect on the Location of the Center of Gravity of the Body as a Whole, on Postural Alignment and on Stance Stability

*Preliminary Report**

Emily E. Mueller, M.S., and Ida M. Summers, M.S.

Recent literature, both lay and medical, has emphasized the importance of and has greatly clarified the problems concerned with the rehabilitation of the amputee.[1] Although increased attention has been focused on the training of amputees as a result of the war, the armed forces alone did not produce the large number of disabilities of this type occurring during that period. The number of amputations sustained in civilian industry was more than three times that of service-connected injuries and the future incidence of both upper and lower extremity amputations is estimated at 40,000 annually.[2] The need for an increased understanding of the fundamental rationale of training technics is evident.

Many advances have been made in recent years by the orthopedist and the limb manufacturer in the development of a more functional prosthetic appliance. But, an amputee must have more than a well-fitting prosthesis; he must be taught how to use it. Physical therapists affiliated with expanding physical medicine and rehabilitation centers can share in the responsibility of this task. It is generally conceded that the underlying problem confronting the amputee, once he is properly fitted with a prosthesis, is one of balance. During both standing and locomotion, his every effort at readjustment and realignment is directed toward maintaining the body in a stable upright position. In order to aid in the achievement of these adjustments in the most economical manner and in the best posture attainable, the biomechanics of stance in relation to the handicap must be considered.

The purpose of this study was to determine the degree of stability attained by an average group of lower extremity amputees. The method selected was that of center of gravity observations. As far as we have been able to determine, this fundamental problem has never been subjected to direct experimental investigation though the importance of gravitational stresses to ambulation is not only generally recognized but has been used in studies of gait training and prosthetic construction. Brunnstrom[1] has emphasized the importance of gravitational stresses in her critical and exhaustive analysis of gait mechanics in the amputee.

Biomechanical Considerations

From a physical viewpoint, stability is dependent upon two factors: first, the height of the center of gravity, and second, the size of the supporting base. Pioneer observations on the location of the center of gravity in man were made by Borelli in 1679.[3] He determined the height of the center of gravity by placing a subject on a plank, then balancing subject and plank together on a prismatic wedge. By using this method he found the combined center of gravity of the subject and plank, not the center of gravity of the subject alone. An example of a considerably improved method is the apparatus used by Hellebrandt et al.[4] This adjustable platform is provided with a counterbalance which permits rapid, direct determination of the height of the center of gravity. This they found to be 55 per cent of the total height in women; its position in men is only slightly higher.[5] Variation in the location of the height of the center of gravity is comparatively small.[6]

In addition to the relatively high center of gravity and small supporting base in man, the

*This work was done in the Division of Clinical Research, Baruch Center of Physical Medicine, Medical College of Virginia, Richmond, Virginia, in partial fulfillment of the requirements of the M.S. degree in Physical Therapy, and was presented at the Annual Conference of the A.P.T.A., June 23, 1949, Boston, Mass. The work was done in cooperation with Dr. F. A. Hellebrandt, Sara Jane Houtz, Mildred F. Heap and Robert N. Eubank.

living body is also composed of movable parts which are constantly changing their position in relation to one another. Thus, rotary forces are set in motion whenever the center of gravity of any segment does not coincide with the vertical projection of the center of gravity of the body as a whole. The magnitude of the rotary components is equal to the weight of the part multiplied by the horizontal distance of the gravity line of the body as a whole from the axes of rotation of the joints involved.[7] The conditions necessary for effective equilibrium are met only when these rotary forces are counterbalanced in a manner which permits the center of gravity of the body as a whole to fall in the middle of the supporting base.

The most recent investigative work on the center of gravity appears to be that of the Swedish investigator, Akerblom, published in 1948.[8] Using x-rays of the joints synchronized with center of gravity observations, he found that the weight line in comfortable standing falls in front of the axis of rotation of the ankle joint, slightly in front of the knee joint and slightly behind the hip joint. His direct experimental findings thus verify the empirical belief that the stresses due to gravity are greatest at the ankle joint, and that the weight line, falling in front of the knee and ankle joints, tends to tip the body forward and hold the knee in extension. According to Morton,[9] the nearer the vertical projection of the center of gravity coincides with the geometric center of the base, the greater is the degree of stability. To our knowledge, no one has studied the stance of the amputee from this fundamental viewpoint.

Formerly it was thought that the ligaments and structures of the joints played a dominant role in stance stability; now, however, it is generally agreed that the involuntary tonic contraction of the antigravity muscles is the prepotent controlling force in the maintenance of the upright posture.[10] The preservation of the erect position is a result of the cooperation of a large number of reflexes, the most important of which is the myotatic or stretch reflex described by Liddell and Sherrington.[11] Tonic reflex contraction can be evoked by a slight stretching of the muscle; the afferent impulses eliciting the contraction emanate from tension receptors within the muscle itself. The number of motor fibers activated in opposition to the pull of gravity is proportional to the degree of stretch. As a general rule, the chief extensors of the body possess a slow contracting component, composed of red muscle fibers, which is particularly sensitive to the myotatic reflex. Thus, standing balance of the human body is not passive, but rather the resultant of a constant interaction between the force of gravity and the equilibrating contractions of the antigravity muscles. These tend autonomously to neutralize every unbalancing force and bring the center of gravity of the body as a whole over the middle of the supporting base.

Cooperating with this proprioceptive barrage from muscles, tendons and joints are retinal stimuli and deep pressure and light touch sensations from the soles of the feet. Though the basic mechanism controlling muscular tonus is located in the spinal cord, the myotatic reflex is greatly influenced by higher centers. Many years ago Magnus[12] demonstrated that impulses from the utricle of the labyrinth and neck proprioceptors are capable of altering significantly the degree of tonus in the limb musculature. Numerous possibilities also exist for cortical, midbrain and cerebellar influence on the basic myotatic reflex.

Pioneer observations on postural stability were made in 1862 by Vierordt,[13] who recorded head sway. In this method, a pen is attached to the head and writes on a smoked paper. The graphic representation of head sway, or, as some investigators prefer, the recording of motion at the hips, assumes that the body shifts as a whole over the ankle joint. Hellebrandt, believing that observation of the involuntary oscillations of the center of gravity was a more valid approach to the study of stance stability, introduced this method approximately a decade ago.[14]

Since the stresses of gravity are greatest at the ankle joint, the cessation of proprioceptive impulses from the antigravity muscles of the calf on the amputated side is probably one of the greatest physiological handicaps to be met by the amputee. Loss of these impulses and those emanating from the sole of the foot, which in the normal constantly send messages to the spinal cord and higher centers, and which autonomously affect postural adjustment, introduce gaps in the amputee's reflex and conscious appreciation of body position. Their loss decreases the number of compensatory mechanisms available to counteract the unbalancing effects of gravity.

Since the weight of the prosthesis is usually less than the anatomical part lost, reasoning from first principles suggests that the amputation of one or both lower extremities raises the height of the center of gravity of the body as a whole; in a unilateral or asymmetric bilateral amputation there is, in addition, a lateral displacement of the center of gravity. These two factors, diminishing stability from a mechanical viewpoint, must be dealt with by an individual who has a decreased

number of compensatory reflex mechanisms at his disposal.

Figure 1. Determining the height of the center of gravity of a bilateral amputee without prostheses.

The amputee instinctively compensates for his handicap by standing with his feet farther apart than normally. Thus stability is increased by increasing the size of the supporting base. Prosthetic construction also attempts to secure stability for the amputee by introducing a variety of compensatory mechanical devices. According to Thomas[15] the knee joint of the prosthesis should be placed posterior to the transverse axis of the normal knee. This is done so that the weight line will fall in front of the knee joint. Knee joint stability is maintained as long as the weight line falls in front of the knee.[7] Since ankle joint extensors are absent in a lower extremity amputee, a substitute for their action can be provided by placing the artificial foot in slight plantar flexion and maintaining it in that position. By regulating the thickness of a rubber bumper in the instep and thereby limiting dorsal flexion of the ankle, the degree of rotation possible as a result of gravitational stresses is also checked. Lateral security at the ankle is insured by prohibiting any side motion in the artificial foot. However, these mechanical devices are insufficient in themselves, and physiological mechanisms must be called upon to achieve effective stability in the vertical stance.

SUBJECTS OF THE INVESTIGATION

The experiments herein reported were performed on a group of 42 subjects, 24 of whom were lower extremity amputees. Of these, 8 were unilateral below the knee, 13 were above the knee, and 3 were bilateral amputations. Three women were included in the group. All were adults who had worn their prostheses from one month to 30 years. Control observations were made on a group of 18 normal healthy adults, male and female, representing a variety of body build types.

ANALYSIS OF A TYPICAL CASE

The case selected to illustrate the methods developed is R.T., a unilateral above the knee amputee who is 24 years old and sustained his injury in the armed forces. Observations were made with the subject wearing shorts and low heeled shoes. The first objective was to determine the height of the center of gravity of the amputee and to compare that with the normal. This was done with the subject in the horizontal position on a balance board suspended in stable equilibrium between two supporting knife edges (Fig. 1). The method is based on the principle of Newton's third law. A sliding weight permits the subject to be balanced rapidly and accurately. The distance of the center of gravity from the fulcrum can then be determined by equating moments. The height of the center of gravity was determined both with and without the prosthesis. It was

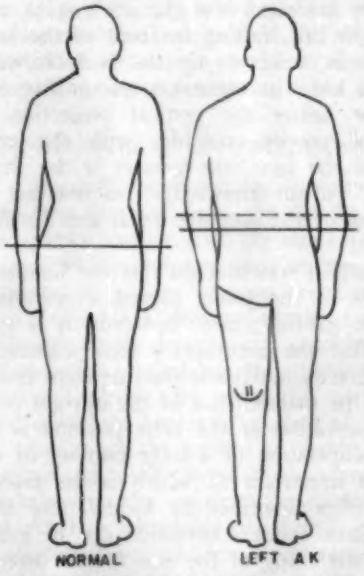

Figure 2. Comparison of the height of the center of gravity of the amputee with the normal subject. Straight line (———) with prosthesis. Dotted line (.....) with prosthesis removed.

found to be 59 per cent of the total height with the prosthesis, as illustrated in Figure 2, and 61.1 per cent with the prosthesis removed. This may be compared with 56 per cent in a normal subject of similar build. Thus the deductions made in

the introductory remarks are confirmed by direct experimental observation. First, the height of the center of gravity is significantly elevated by a major amputation of a lower extremity and second, its influence is only partially compensated for by the use of a prosthesis.

For locating the center of gravity in the vertical planes the subject mounts the center of gravity platform and faces the forward and back scale (Fig. 3). An adjustable foot guide is used to approximately equalize the anteroposterior and transverse diameters of support. The standard

Figure 3. The equipment used and the position of subject R.T. and the operators for determining the center of gravity in the vertical planes.

The method used to locate the center of gravity in the vertical planes is based in principle on the procedure first described in this country in 1909 by Reynolds and Lovett.[10] The subject stands upon a horizontal platform supported at each end by a steel knife edge. One edge rests upon a platform scale and the other upon a fixed support. The center of gravity may be then determined by equating moments. That is, the weight of the subject is to the distance between the two knife edges as the scale load is to the distance of the center of gravity from the posterior knife edge. The technic used in this study is a modification of this principle described by Kelso and Hellebrandt in 1937 and discussed in detail in THE PHYSIOTHERAPY REVIEW in 1942.[17]

To assist in the analysis of reflex changes in stance alignment, a schematograph was used. This consists of a black wooden box provided with a mirror placed at a 45 degree angle, an adjustable lens, and a plate glass top. A thin sheet of tracing paper is placed over the glass top and when properly illuminated an outline of the postural alignment of the subject may be traced while center of gravity observations are being made.

procedure consisted of a 60-second period of normal standing with eyes open, followed by an equal period of standing with eyes closed. The latter was done to evaluate the influence of visual stimuli on stance stability. After a suitable rest pause, the effect of fatigue was tested by prolonging the period of standing to 5 minutes.

In order to determine the size of the supporting base, x-rays of the feet with shoes on were taken to locate the position of the metatarsophalangeal joints. Tangents to the heels, lateral borders of the feet and a line through the heads of the first metatarsals delimit the functional base. Morton[9] has pointed out that the toes do not participate in standing but serve as an auxiliary security factor when the stance is forwardly unbalanced.

The observations illustrated in Figure 4 indicate the average position of the amputee's center of gravity during 60 seconds of normal comfortable standing. When the eyes remain open the vertical projection of the center of gravity of this unilateral above the knee amputee lies remarkably near the geometric center of the supporting base. Thus we see that the amputee is able to relocate his center of gravity spontaneously so that it oc-

cupies the position known to be associated with maximal stability. When the eyes are closed, the center of gravity shifts slightly toward the normal extremity. This suggests that the amputee relies more on his intact leg when he is deprived of the reflex effects of visual cues on postural tonus.

The maximum postural sway occurring in both planes may be converted into center of gravity changes and projected into the supporting base. The polygon enclosed by connecting these points (Fig. 4) then yields a quantitative estimate of the area of sway which may be used as a criterion of the amputee's stance stability. This is measured by a planimeter and may be expressed as a percentage of the supporting base. As can be seen, only a small portion of the available functional base is utilized. A large margin of security remains. This is a striking demonstration of the compensatory powers of a seriously disabled individual.

Subject R.T. showed a 118 per cent augmentation in postural sway when deprived of visual stimuli (Fig. 4). This evidence of increased instability was coupled with a slight tendency of the center of gravity to shift toward the normal leg. As might be expected postural reflexes of visual origin offer considerable assistance to the amputee. The important fact, however, is the magnitude of the area of the supporting base which still remains as a margin of security.

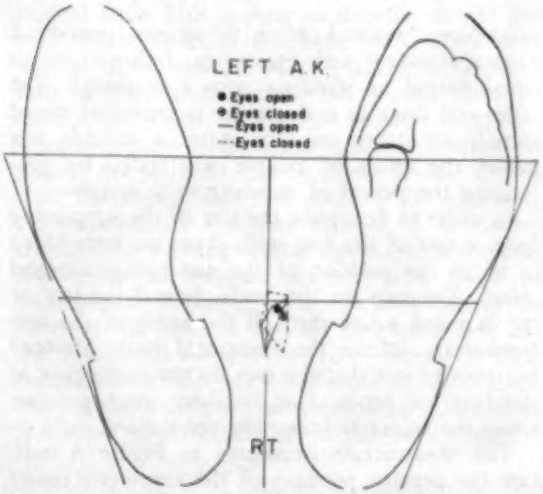

Figure 4. Supporting base of subject R.T. with the projected center of gravity and the area of postural sway.

Longer periods of standing produced little if any change in the picture of subject R.T., who had been provided with a well-fitting prosthesis and had received proper instruction in its use. The center of gravity remained in about the same place and there was no significant increase in postural sway. There is no evidence of fatigue or discomfort shifting the weight toward the normal leg.

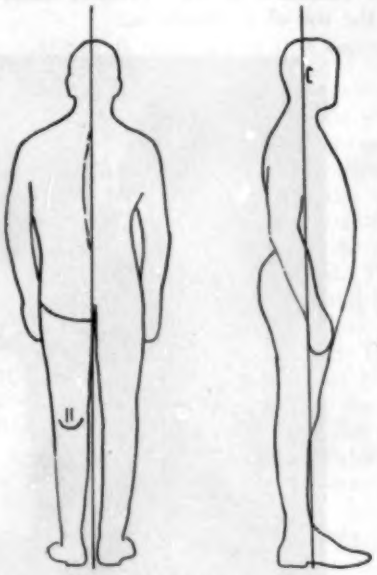

Figure 5. Posterior and side view schematograms with superimposed weight lines.

The experimentally determined weight line may be introduced into the concurrently derived schematograms by relating reference points on the schematogram to known points on the center of gravity platform. Reflex compensatory postural realignment is clearly evident in Figure 5. Note that the gravity line falls in the center of the transverse diameter of support and well in front of the ankle joint at a point approximating the midpoint of the anteroposterior diameter disregarding the toes. The schematogram shows an easily discernible lateral curvature of the spine. This realignment appears to be necessary if the subject is to maintain his center of gravity over the middle of the base. This amputee evidently shifts his torso toward the side of the amputation in an effort to compensate for the asymmetric weight loss, and the left C curve which results is secondary to reflex efforts to keep the head in the midline. This side view schematogram shows the increased lordosis, often observed in the above the knee amputee.

SUMMARY

The biomechanics of the stance of the lower extremity amputee is discussed in the light of the fundamental physiological mechanisms involved,

and the methods developed for the direct experimental study of the amputee's adjustment to his disability are presented. The latter are illustrated by the analysis of a typical case. The observations made on the remaining members of the experimental group vary with the extent and location of the amputation, the fit of the prosthesis and the manner in which the artificial limb or limbs are used.

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Authors-Doctors

There are many instances of distinguished authors being doctors, men drawing upon their knowledge of the frailties of human nature to illumine the theme of their books. One of the best examples is Tobias Smollett, an irascible Scotch doctor, who discovered Nice and the Riviera for us and the French. Then, we have Sir Thomas Browne (1605-1682), the beloved physician, who despite the civil war raging around him sat placidly writing the RELIGIO MEDICI. If you want confirmation of his genius and charm of style, take up and read the concluding chapters of URN BURIAL. Tchekow, the Russian, is another doctor who had enormous influence on his generation, his greatest masterpieces perhaps being THE DUEL, WARD No. 6 and THE BISHOP. It is hardly necessary to recall to you Conan Doyle of Sherlock Holmes fame; Somerset Maugham, that master of drama and the short story; Brett Young and Warwick Deeping. . . . These are names known to all, but I wonder how many realize that Clemenceau, The Tiger, and President of the French Republic, was a practising physician throughout his long life, nor must we forget that Robert Bridges, the Poet Laureate, was a cultured physician, many of whose poems show the soul and instinct of an artist alive to human suffering. Sir Charles Wyndham, perhaps one of the most beloved men of our stage, was a surgeon in the American Civil War and often gave to his audience the benefits of his medical knowledge.—V. B. Green-Armytage, M.D., The Debt of the Fine Arts to Medicine, *Cambridge University Medical Society Magazine,* Easter term, 1949, Reprinted from "The Embryo," Summer, 1947. (From J.A.M.A., 141:2:116, Sept. 10, 1949.)

Reprints Available

One free copy of each scientific reprint (except the History of the American Physical Therapy Association, and the Anterior Poliomyelitis and Cerebral Palsy Issues of the REVIEW will be provided upon request to all members, students in the approved schools and libraries. A small charge is made as indicated for additional copies to members, students and libraries, and for all copies to nonmembers. The informational brochures are available to all without charge. To obtain reprints write: American Physical Therapy Association, 1790 Broadway, New York 19, N. Y.

PHYSICAL THERAPY, A SERVICE AND A CAREER
An illustrated brochure, describing the opportunities for a career in physical therapy, available scholarships and educational requirements for entering a school of physical therapy. (Made available through National Foundation for Infantile Paralysis funds.)

OUR ASSOCIATION
An informational booklet on the activities, scope and services of the American Physical Therapy Association.

PHYSICAL THERAPY
A question and answer article covering the usual queries received on physical therapy.

PHYSICAL THERAPY—*Suggestions for Prospective Students.*
Outlines the professional course of study for college students preparing for physical therapy.

CODE OF ETHICS
Ethics for the physical therapist of the American Physical Therapy Association.

ESSENTIALS OF PROFESSIONAL ETHICS IN PHYSICAL THERAPY. MARY HASKELL.

PERSONNEL POLICIES FOR QUALIFIED PHYSICAL THERAPISTS
Suggestions as to salary, hours, vacations, etc., by the American Physical Therapy Association.

APPROVED SCHOOLS OF PHYSICAL THERAPY
A list of schools approved by the Council on Medical Education and Hospitals of the American Medical Association.

EDUCATIONAL OPPORTUNITIES FOR PHYSICAL THERAPISTS
A list of postgraduate programs offered by the approved schools and a list of specialized courses for physical therapists.

PHYSICAL THERAPY SECTION: *Its Scope and Employment Opportunities.*
This consists of 12 articles by various contributors on physical therapy in a state crippled children's service, public health service, the cerebral palsy field, the Veterans Administration, the industrial clinic, a curative workshop, a large general hospital, a small general hospital, a children's hospital, crippled children's schools, the physician's office or clinic group and the psychiatric field.

CARE OF PATIENTS WITH INFANTILE PARALYSIS: *Correlation in the Nursing and Physical Therapy Services.*
CARMELITA CALDERWOOD HEARST (5c)

POSTURE TRAINING FOR ADOLESCENTS
CAROLYN BOWEN (5c)

INTEGRATION OF PRINCIPLES OF BODY MECHANICS AND POSTURE IN NURSING: *Demonstration Project at Vanderbilt University School of Nursing.*
MARGARET C. WINTERS. (10c)

PHYSICAL THERAPY AND CHEST SURGERY
FLORENCE S. LINDUFF. (10c)

PHYSICAL THERAPY MANAGEMENT OF LOWER EXTREMITY AMPUTEES.
PAIGE WEAVER. (10c)

TOYS, GAMES AND APPARATUS FOR CHILDREN WITH CEREBRAL PALSY.
GLADYS G. ROGERS AND LEAH THOMAS. (10c)

ANTERIOR POLIOMYELITIS: *Rehabilitation by Functional Exercises.*
EMIL D. W. HAUSER, M.D. (10c)

FUNCTIONAL TESTING AND TRAINING: *Physical Therapy Aspects.*
ROBERT L. BENNETT, M.D., AND HAZEL R. STEPHENS. (15c)

GUTHRIE-SMITH APPARATUS: *Its Construction and Use in Rehabilitation.*
KATHRYN S. BIER. (20c)

THE NEED FOR PHYSICAL THERAPY IN POSTPARTUM CARE.
WILLIE REBECCA HARVEY. (20c)

REHABILITATION OF THE INJURED CHEST.
VICTOR P. SATINSKY, MAJ. MC, AUS, AND DORA DYKINS (20c)

THE MEAUREMENT OF JOINT MOTION.
MARGARET LEE MOORE (25c)

THE PHYSICAL THERAPY REVIEW—*Special Anterior Poliomyelitis Issue.* July-August 1947 (75c)
The magazine contains 11 articles by leading physicians and physical therapists on research and treatment of polio. There are 16 abstracts of articles on polio from current medical journals.

A HISTORY OF THE AMERICAN PHYSICAL THERAPY ASSOCIATION.
IDA M. HAZENHYER. (50c)
An account of the Association's activities and growth from 1921-1946.

THE PHYSICAL THERAPY REVIEW—*Special Cerebral Palsy Issue.* May-June 1948 (75c)
This magazine contains 8 articles by leading physicians and physical therapists on research and treatment of cerebral palsy. There are 5 abstracts of articles on cerebral palsy from current medical journals.

Available free of charge from Joint Orthopedic Nursing Advisory Service, 1790 Broadway, New York 19, N. Y.:

MAKING PHYSICS A PART OF THE CURRICULUM: *Three methods of incorporating physics in the nursing school curriculum.*
HESSEL H. FLITTER, R.N.

THE PATIENT WITH BULBAR-RESPIRATORY POLIOMYELITIS.
FREDERIC J. KOTTKE, M.D., AND WILLIAM G. KUBICEK, PH.D.

SCHOOLS APPROVED FOR TRAINING PHYSICAL THERAPISTS

By Council on Medical Education and Hospitals of the American Medical Association

Name and Location of School	Medical Director	Technical Director	Entrance Requirements[2]	Length in Months	Classes Start	Tuition	Certificate, Degree, Diploma
CALIFORNIA							
Children's Hospital, Los Angeles	Samuel S. Mathews	Sarah S. Rogers	a-b-d	14	Sept	$300	Cert. or Degree
College of Med. Evangelists, Los Angeles[1]	F. B. Moor	R. Wm. Berdan	a-b-c-d	12	Sept	$225	Cert. or Degree
Univ. of So. California, Los Angeles	Charles L. Lowman	Charlotte W. Anderson	a-b-d[3]	12	Sept	$496	Cert. or Degree
Univ. of California Med. School, San Francisco[1]	Lucile M. Eising	Margery Wagner	d-e	12	Sept	$220[4]	Cert. or Degree
Stanford Univ., Stanford[1] (Palo Alto)	Wm. Northway	Lucille Daniels	a-b-d[2]	12	Jan June	$523.30	Cert. or Degree
Permanente Hospital, Oakland and Vallejo[1]	O. L. Huddleston	Dorothy Hoag	a-b-d	12	July	$200	Cert.
COLORADO							
Univ. of Colorado Med. Center, Denver	Harold Dinken	Mary Lawrence	a-b-d	12	Sept	$300	Cert. or Degree
ILLINOIS							
Northwestern Univ. Med. School, Chicago	John S. Coulter	Gertrude Beard	a-b-d	12	Oct	$450	Cert.
IOWA							
Univ. of Iowa Med. School, Iowa City	W. D. Paul	Olive C. Farr	e	12	Sept	$200	Cert.
KANSAS							
Univ. of Kansas School of Med., Kansas City	Donald L. Rose	Lilyan G. Warner & Ruth Monteith	a-b-c[3]	12	Feb Sept	$80[4]	Cert. or Degree
MASSACHUSETTS							
Bouve-Boston School of Phys. Educ., Boston	Howard Moore	Constance K. Greene	H.S.	36	Sept	$500 yr.	Degree
Simmons College, Boston	Wm. T. Green / Arthur L. Watkins	Janet B. Merrill	a-b-d	16-36	Sept	$550	Cert. or Degree
Boston Univ. College of Phys. Educ. for Women: Sargent College, Cambridge 38	Kenneth Christophe	Adelaide McGarrett	H.S.	36	Sept	$435 yr.	Cert. or Degree
MINNESOTA							
Univ. of Minnesota, Minneapolis[1]	Miland E. Knapp	Ruby M. Green	H.S.	38	Oct	$530[4]	Degree
Mayo Clinic, Rochester	Earl C. Elkins	Helen Belknap	a-b-c	12	Sept	None	Cert.
MISSOURI							
Washington Univ. School of Medicine, Barnes Hospital, St. Louis[1]	Sedgwick Mead	Beatrice F. Schulz	c	2 yrs	Sept	$400 yr.[6]	Degree
St. Louis Univ. School of Nursing, St. Louis[1]	A. J. Kotkis	Sr. Mary Imelda	H.S.	36	Jan Sept	$300	Degree
NEW YORK							
Albany Hospital, Albany	John W. Ghormley	Catherine Graham	a-b-c	12	Sept	$250	Cert.
Columbia Univ., New York City[1]	Wm. B. Snow	Floy Pinkerton	a-b-c	1 or 2 yrs	Sept	$450 yr.	Cert. or Degree
New York Univ. School of Education, New York City[1]	George G. Deaver	Elizabeth C. Addoms	a-b-d	12	Sept	$589	Cert. or Degree
NORTH CAROLINA							
Duke Univ. School of Med., Durham[1]	Lenox Baker	Helen Kaiser	a-b-d	15	Oct	$300	Cert.
OHIO							
Cleveland Clinic, Cleveland	S. G. Gamble	Anna Wetterhuus	a-b-d	12	Jan	$200	Cert.
PENNSYLVANIA							
D. T. Watson School of Physical Therapy, Leetsdale[1]	Jessie Wright	Kathryn Kelley	a-b-d	12	Oct	$300	Diploma
Graduate Hospital, Univ. of Pa., Philadelphia[1]	George M. Piersol	Dorothy Baethke	a-b-e	12	Sept	$300	Cert.
TEXAS							
Hermann Hospital School of Physical Therapy, Houston	Oscar O. Selke, Jr.	Mary Elizabeth Kolb	a-b-d	12	Oct	$300	Cert. or Degree
Univ. of Texas School of Med., Galveston	G. W. N. Eggers	Ruby Decker	a-b-d	12	Jan	$163[4]	Cert.
VIRGINIA							
Baruch Center of Physical Medicine of Med. College of Virginia, Richmond[1]	Walter J. Lee	Susanne Hirt	a-b-c[3]	12	Sept	$351[4]	Cert. or Degree
WISCONSIN							
Univ. of Wisconsin Med. School, Madison[1]	Harry D. Bouman	Margaret Kohli	a-b-c[3]	12	Sept	$150[4]	Cert. or Degree
MEDICAL DEPARTMENT—U. S. ARMY							
(a) Medical Field Service School, Brooke Army Medical Center, San Antonio, Texas, and	James E. Tate Lt. Col., M.C.	Ethel M. Theilmann, Major, WMSC	f	12[7]	Nov	None	Cert.
(b) Fitzsimons General Hospital, Denver, Colorado, or	H. B. Luscombe Colonel, M.C.	Elsie Kuraner, Major, WMSC	Completion of Medical Field Service School.				
(c) Walter Reed General Hospital, Army Medical Center, Washington, D. C.	Emmett M. Smith Colonel, M.C.	Barbara Robertson, Captain, WMSC	Completion of Medical Field Service School.				

[2]Courses are so arranged that any of the entrance requirements will qualify students for training. a = Graduation from accredited school of nursing; b = Graduation from accredited school of physical education; c = Two years of college with science courses; d = Three years of college with science courses; e = Baccalaureate degree; f = Baccalaureate degree with major in physical education or the biological sciences. H.S. = High school graduation.

[1]Male students are admitted.

[2]High school graduates accepted for a four-year course leading to A.B. degree.

[3]High school graduates accepted for four-year college course.

[4]Nonresidents charged additional fee.

[5]Certificate granted by Children's Hospital Society; degree granted by University of California at Los Angeles.

[6]Tuition reduced second semester of second year.

[7]12 months includes training at the Medical Field Service School and Fitzsimons or Walter Reed General Hospitals.

Editorials

Acceptance of term "Physical Therapist"

The following letter was written by Donald A. Covalt, M.D., Associate Professor of Rehabilitation and Physical Medicine, New York University, under date of September 1, 1949, to H. Worley Kendell, M.D., at the Netherlands Plaza Hotel, Cincinnati, Ohio:

"I am extremely sorry that last minute emergencies have prevented my attendance at the Joint Meeting and Educational Conference on September 6, 1949, at the Netherlands Plaza.

"At the Annual Meeting of the American Physical Therapy Association early this summer, the Advisory Council to the Association discussed the question as to whether the auxiliary medical worker should be called a 'physical therapist' or a 'physical therapy technician.' After careful consideration of all of the problems, it was the decision of the Advisory Council that the term should be 'physical therapist.' The members of the Advisory Council are Dr. John S. Coulter, Dr. Emil D. W. Hauser, Dr. Hugo V. Hullerman, Dr. H. Worley Kendell, Dr. A. William Reggio and myself.

"The Advisory Council to the American Physical Therapy Association also wished to bring this decision to the attention of the present conference for their consideration.

"In the discussion it was brought out that the Doctor of Physical Medicine is now called a Physiatrist and that this term has had wide acceptance throughout the country and that with this acceptance it was felt that there would be no confusion in calling the auxiliary medical worker a physical therapist.

"It should also be pointed out that the term physical therapist is accepted and used by the U. S. Civil Service, U. S. Army and the U. S. Navy. The New York City Civil Service has during this past year designated the qualified and accredited worker a physical therapist. To change from physical therapist to physical therapy technician would cause an immediate loss of professional status and lowering of salaries in the Civil Service Commission. It is the feeling of many universities, including the New York University group that the term physical therapist is to be greatly preferred over any other terminology.

"It should also be pointed out that the term physical therapist has been recommended by the Joint Committee composed of members of the Registry Board and the American Physical Therapy Association after two years of discussion. Legal advice has supported this recommendation.

"In conclusion, the following was passed by the Advisory Council of the American Physical Therapy Association: 'With the adoption of the word physiatrist by the Council on Physical Medicine and Rehabilitation, and after careful review of the advantages and disadvantages both to the American Physical Therapy Association, to the physicians in the practice of physical medicine and rehabilitation and to the medical profession, it is deemed advisable to recommend the use of the word physical therapist by the Association.'

"It is the hope of the Advisory Council of the American Physical Therapy Association that the Consultants on Education of the Council on Physical Medicine and Rehabilitation and Education Committee of the American Congress of Physical Medicine will accept the term physical therapist at this conference."

* * * * * *

We are pleased to report that the Board of the American Registry of Physical Therapy Technicians voted to approve the term physical therapist.

Final action on the change of name of the Registry rests with the vote of the membership of the American Congress of Physical Medicine. We have not as yet been informed of the results of this vote.

Polio 1949

As this report is written, September 1, 1949, polio incidence in the United States is still on the increase. Physicians, nurses, physical therapists and others are working long hours to save life and to prevent crippling.

The American Physical Therapy Association is

very proud of the service the physical therapists are giving: Those who have accepted emergency assignments; those in permanent positions who are faced with a double or triple daily case load; inactive members who have returned to work in their home communities; members who have volunteered for week-end or night service, giving up their leisure hours; chapter presidents and chapter polio committees who have helped so much by trying to marshal all resources in their area; school directors who have provided many extra helping hands by use of students and the new graduates; physical therapists in the epidemic aid units—Harvard, Northwestern, Stanford and D. T. Watson.

Requests for assistance have come in to the National Office from twenty-nine states. The number increases each week as the number of convalescent cases increases. It is hard to ration services and to say, "Sorry, we can send you no one—Maybe in two weeks—Have you tried to get anyone in your home community—Can your staff increase their case load?" We get out the geographical list and hope to find someone, and sometimes we do. A young married physical therapist with two children, one seven and one twelve weeks, says, "Yes, I'll help on convalescent cases." A physical therapist in a large city hospital says, "Couldn't we come on duty an hour earlier so that we can take care of more cases?" A supervisor working from 8:00 A.M. to 9:00 P.M. reports all the cases are under treatment, muscle tests on everyone. She was tired, but there was a job to do—a patient needed care and got it.

This is polio 1949. Our numbers are small but the services rendered per physical therapist are great. Our problem does not decrease as the epidemic diminishes; rather it increases. It will require greater efforts, better planning and resourcefulness to meet the post-epidemic needs. The assistance of the families must be obtained in carrying out treatment instructions, clinics established where one physical therapist can see many rather than a few in home visits, patients taught to do exercises so that on the days when the physical therapist must treat others, exercise goes on. Everyone will have to share.

What's the answer? *More physical therapists.* You can help by recruiting a student. Let's get a thousand into school next year. They are all needed. It will be only a start.

Yes, we are proud of the physical therapists—the record speaks for itself. Service over and above the line of duty is the order of the day throughout the country.

—MILDRED ELSON

Selection of Officers

The careful selection of leaders for a professional organization is of the utmost importance for proper growth and development. It is the responsibility of each member to consider and bring to the attention of the local chapter officers or to the Nominating Committee the members in her area who have the qualities that are needed for leadership. The maintenance of a constant interest in professional problems, the use of initiative and good judgment in coping with those that are immediately apparent and the evidence of foresight in relation to future needs that may arise are requisites for all candidates who may eventually serve as our national leaders.

The need for experience in the field and in chapter affairs seems obvious. The requirement of membership in the Association for five years and the recommendation that candidates should have proven their ability by chapter leadership are outgrowths of the recognition of these needs. Some acquaintance with the many problems of our organization is an essential for the candidate.

For the coming general election the Nominating Committee not only asks for cooperation from the members in the presentation of candidates but also that sufficient time be given for the careful consideration and selection of nominees. All names with qualifications should be sent to the National Office no later than November 15, 1949.* A fair representation of the membership will be dependent on the assistance that you give to the Committee.

—LUCILLE DANIELS,
Chairman, Nominating Committee

Association Activities

The 1950 Conference

This will be held in Cleveland, Ohio, at the Hotel Statler, as stated in the August REVIEW. However, it will start Monday, June 26th, rather than Sunday, June 25th.

Public Relations

With the financial assistance of the National Foundation for Infantile Paralysis, Miss Peggy

*For detailed information see "Procedures for the Nominating Committee," pages 416-417, The Physical Therapy Review, September 1949.

Jiler has been appointed Director of Public Relations. She is working under the direction of the National Office staff, and in close cooperation with the chairmen of the Public Relations and Education Committees. It is hoped that this will be an effective means of increasing the recruitment of physical therapy students.

Essentials of a Hospital Department —Physical Therapy

The August issue of HOSPITALS, the Journal of the American Hospital Association, carried a review of this on page 59.

Have you ordered yours? It is available from the National Office at a cost of 25c to members.

51st Annual Convention, American Hospital Association

This was held in Cleveland from September 26-29, 1949. The American Physical Therapy Association exhibited a model of the 50-bed hospital department as described in the manual "Essentials of a Hospital Department—Physical Therapy."

Membership News

Personals

• Barbara White, who resigned as Educational Secretary of the A.P.T.A. effective July 1, 1949, has accepted a position with Dr. Howard Rusk at the New York University-Bellevue Medical Center, New York City. She will assist in the preparation of a manual on the treatment of neurological conditions.

• Florence Phenix has resigned her position as Special Nursing Consultant with the Children's Bureau, Federal Security Agency, Washington, D. C. She will assume new duties with the Visiting Nurse Association of Milwaukee, Wisconsin.

New Members

• The following are newly accepted members of the American Physical Therapy Association:

Marion V. Billings
Genevieve H. Czaplicki
Mrs. Alice Storlie Davis
Mrs. Joyce B. Fritsch
Russell Goebel
Walter Goodman
Audrey D. Hardy
Irene P. Kazmierowicz
Mrs. Nora A. Kuhlman
Edwina B. Kuhn
Mrs. Bette M. Lanfranchi
Regina McGeorge
Judith Miller
Geneva F. Richard
Hazel A. Rider
Vida A. Skellie
Ruth E. Stanwood
Joan Wambsgans

• Recent graduates and former student members of the following schools:

Bouve-Boston School of Physical Education:

Patricia Adams
Dorothy Ann Bjork
Laura J. Bobrow
Priscilla Colvin
Sarah Fithian
Mary Anne Geoghegan
Elizabeth P. Hall
Margaret K. Heffernan
Alice M. Knight
Nancy R. Lutz
Alice H. Smith

Columbia University:

John F. Burke

Graduate Hospital, University of Pennsylvania:

Mr. Lonis Ballard
Paulanna Binder
Mrs. Barbara Smith Boldt
Agnes M. Conner
Mary T. Duffy
Mary I. DuVally
Gertrude Gens
William Kupsky
Isobel M. Logan
Ruth M. Loverude
Robert Meade
Roger Meade
John J. Nostrant
Doris E. Porter
William H. Smith
Diane M. Wilcox
Anna L. Zahniser

Sargent College:

June E. Breen
Helene Marie Diggin
Jean-Marie Gallup
Sheila M. O'Neill

Stanford University:

Daniel E. Albritton
Peggy Joann Dyer
Eugene Fleming
Barbara Ellen Kent
Jean I. Marshall
Florence Bessie Morrow
Ruth Esther Pflueger
Carolyn Jane Rhora
Nadine Lois Sarvis
Thomas Weaver

U. S. Army—Walter Reed General Hospital:

Lt. Modenna M. Brossard
Lt. Martha J. Eason
Lt. Catherine M. Owen
Lt. Carolyn I. Regan
Lt. Mary N. Will

University of Kansas:

Frank I. Jarnevic
Edward Norris

Marriages:

Jean L. Allen is now Mrs. R. L. Marquart of South Bend, Indiana.

Lt. Josephine M. Biedka is now Mrs. Owen G. Schultz of Washington, D. C.

Joyce M. Blodgett is now Mrs. Paul F. Grimm, Jr., of Chicago, Illinois.

Jeanne Collier is now Mrs. Jeanne C. Denham of South Bend, Indiana.

Norma Louise Conkle is now Mrs. Arthur J. Archung of Lawrence, Kansas.

Caroline Dunne is now Mrs. Caroline D. Tate of Jamaica, Long Island, New York.

Elizabeth Hall is now Mrs. Charles E. Cousins of New York City.

Elaine C. Hanlon is now Mrs. Donald A. Seagel of Northampton, Massachusetts.

Patricia Hemsley is now Mrs. Hubert M. Livingston of Trenton, New Jersey.

Helen L. Matchett is now Mrs. Seruch T. Kimble of Chevy Chase, Maryland.

Stacy Matikonis is now Mrs. Stacy M. Sankus of Brockton, Massachusetts.

Juliet Ann Moss is now Mrs. Robert L. Schmidt of Fort Wayne, Indiana.

Mrs. Roberta Schelter is now Mrs. Roberta Lennox of Syracuse, New York.

Mary R. Yehle is now Mrs. Mary Y. Fellers of Madison, Wisconsin.

General News

Polio

A conference was held in Ann Arbor, Michigan, June 1949, "to answer the needs frequently expressed by health officers, hospitals, physicians and others for an up-to-date authoritative reference and guide for meeting practically the many problems related to the control of poliomyelitis." As a result of this meeting copies of "Recommended Practices for the Control of Poliomyelitis" are available upon request from The National Foundation for Infantile Paralysis, Inc., 120 Broadway, New York 5, New York.

Special Course on Polio Care

In November, Orthopaedic Hospital, Los Angeles, aided by a grant from the National Foundation for Infantile Paralysis, will conduct the first in a series of short-term courses on complete care of poliomyelitis patients for physicians, nurses and physical therapists under the direction of Charles LeRoy Lowman, M.D.

The two-week course for physical therapists is scheduled for November 7 through November 18 and is limited to members of the American Physical Therapy Association and/or American Registry of Physical Therapy Technicians. Treatment of poliomyelitis patients during the subacute and convalescent stages will be presented by lectures and demonstrations with opportunity for discussion of problems. Emphasis will be placed on correlation of physical therapy with the work of the medical staff, nurses, occupational therapists, medical social and other services.

Registration fee is $5; tuition $10 a week. A limited number of rooms are available on the grounds of the hospital. Room and board in these quarters will be $25 for the two-week period. Physical therapists who need financial assistance to attend this course may apply to the National Foundation for scholarships.

For further information and enrollment, write: Susan G. Roen, Director of Physical Therapy, Orthopaedic Hospital, 2400 South Flower Street, Los Angeles 7, California.

Dr. Rusk to Make European Trip

In his capacity as Consultant in Rehabilitation to the Department of Social Affairs of the United Nations, Dr. Howard A. Rusk, Professor and Chairman of the Department of Rehabilitation and Physical Medicine, New York University College of Medicine, will leave for an extended trip to Austria and Poland in early September to consult with officials of those countries and to participate in a number of special teaching seminars in rehabilitation.

Doctor Rusk will confer with officials of the World Health Organization in Geneva, Switzerland, of UNESCO in Paris and will observe rehabilitation activities in England.

Mr. Taylor Appointed by National Society

Announcement has been made by Lawrence J. Linck, Executive Director, The National Society for Crippled Children and Adults, of the appointment of Eugene J. Taylor as New York City Field Representative of the National Society.

An Instructor in Rehabilitation and Physical Medicine at New York University College of Medicine and a member of the staff of New York Times, Mr. Taylor also will represent the National Society and its 2,000 local and state affiliates in the New York City area. He is coauthor with Dr. Howard A. Rusk of the recently published "New Hope for the Handicapped," and was in charge of Public Relations for the American Physical Therapy Association at the Conference in Boston.

Award-Winning Army Film Available

The Army Medical Department-Signal Corps "Oscar"-winning motion picture, entitled "Toward Independence," is available on a loan basis to all military organizations and to any nonprofit civilian group. The film may be obtained from the nearest Signal Corps Film Library, or if to be used for television, by writing to the Public Information Officers in the nation's six Army Areas: 1st Army—New York City, 2nd Army—Baltimore, 3rd Army—Atlanta, 4th Army—San Antonio, 5th Army—Chicago and 6th Army—San Francisco.

The picture portrays the program for the care of paraplegics as developed by the Army Medical Department. The film details the progress of a

patient first learning to move about in his hospital bed, then learning to use reeducated muscles in opening doors, climbing stairs, and driving automobiles, and other steps in his rehabilitation.

Although "Toward Independence" was made as a teaching aid in the training of medical personnel, its realism and humanism won for it the annual award of the Academy of Motion Picture Arts and Sciences, as the best documentary film of that year.

Coming Meetings

Date	*Organization*	*Place*
Nov. 7-9	National Society for Crippled Children and Adults	Commodore Hotel, New York, N. Y.
June 25-30, 1950	American Physical Therapy Association	Hotel Statler, Cleveland, Ohio

Index to Current Literature

Amputations

Physical Medicine in Amputations. Fred W. Hark. Archives of Physical Medicine, August 1949.

Anterior Poliomyelitis

Poliomyelitis and the Social Environment. A. Bradford Hill and W. J. Martin. British Medical Journal, August 13, 1949.

Some Aspects of Poliomyelitis in New Zealand. J. E. Caughey. British Medical Journal, August 20, 1949.

Bulbar Poliomyelitis: Favorable Results in its Treatment as a Problem in Respiratory Obstruction. Thomas C. Galloway and Martin H. Seifert. Journal of the American Medical Association, September 3, 1949.

Progress with a New Plan for Polio Care. Hospitals, September 1949.

Poliomyelitis: A Case History. Bentz Plagemann. Life, August 15, 1949.

Cerebral Palsy

Cerebral Palsy—Research. Temple Fay. Spastic Review, August 1949.

Electrotherapy

Electromyographic Diagnosis of Lower Motor Neuron Disease. James G. Golseth and O. Leonard Huddleston. Archives of Physical Medicine, August 1949.

Geriatrics

Problems of Ageing and Chronic Sickness. A. P. Thomson. British Medical Journal, July 30 and August 6, 1949.

The Role of Hypothermia in the Treatment of Vascular Lesions in Geriatric Patients. Robert T. Fox. Journal of the Indiana State Medical Association, May 1949.

On the Significance of the Normal Electrocardiogram in Old Age. Theodore T. Fox. Annals of Internal Medicine, July 1949.

Hydrotherapy

Hydrotherapy: Part II. Matthew B. Ray. British Journal of Physical Medicine, May-June 1949.

Hydrotherapy: Part III. Matthew B. Ray. British Journal of Physical Medicine, July-August 1949.

Possibilities of Hydrotherapy in a Psychiatric Hospital. Paul A. Nelson and Donald J. Erickson. Archives of Physical Medicine, August 1949.

Low Back Pain

Low Back Pain: The Value of Specific Tests in Differential Diagnosis. Earl D. McBride. Rocky Mountain Medical Journal, August 1949.

Miscellaneous

Physical Therapy in Thoracoplasty. Goldberg, Friedlander, Miller and Doppelt. American Review of Tuberculosis, August 1949.

The Influence of Atropine on the Effects of Mecholyl Ion Transfer on the Peripheral Circulation in Man. Jerome W. Gersten, Khalil G. Wakim, Gordon M. Martin and Frank H. Krusen. Archives of Physical Medicine, August 1949.

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Colonic Irrigation. Charles O. Molander. Archives of Physical Medicine, August 1949.

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Physical Therapy Department Guide. Hospitals, August 1949.

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Rehabilitation

Rehabilitation. C. V. Hatchette. Southern Medical Journal, July 1949.

Rehabilitation Centers. Alfred Rives Shands, Jr. Journal of the American Medical Association, July 16, 1949.

Summary of Proceedings
of
American Physical Therapy Association
House of Delegates Session

Copley Plaza Hotel, Boston, Massachusetts, June 19-22, 1949

One hundred delegates from 48 chapters presented their credentials to the officers of the House of Delegates. The following chapters were not represented:

Santa Barbara, Hawaii, Southern Minnesota, Utah.

All officers and directors were present with the exception of Miss Roen, director, who was absent because of recent surgery.

June 20, 1949

The meeting was called to order at 9 A.M. by the Speaker, Mary Clyde Singleton.

The Secretary called roll.

The President announced that delegates and visitors from the following foreign countries were registered at the conference:

Australia, Canada, Cuba, Czechoslovakia, England and Norway.

Upon the motion of Jean Bailey, Carolina, the Speaker appointed the following committee to approve, edit and print the minutes of this session of the House of Delegates:

Mary Haskell, Beatrice Schulz, Carolyn Bowen.

The Speaker read a corrected agenda for the meetings of the House of Delegates and upon motion of the program chairman, Margaret Kohli, this revised agenda was accepted with the printed program as the order of the day.

The following annual reports were read and accepted to be published at an early date in THE PHYSICAL THERAPY REVIEW:

President, Secretary and Treasurer. The Treasurer's report along with the auditor's report is to be mailed to each member.

The speaker called on Helen Kaiser, Chairman of the organizing committee of the School Section. Miss Kaiser reported to the House that the Executive Committee had recommended the creation of a School Section of the American Physical Therapy Association. Rules of government for such a section had previously been drawn up and approved by those members interested in such a section. Miss Kaiser moved the creation of a School Section and by roll call the House of Delegates unanimously approved.

Miss Rogers of Southern California spoke to acknowledge thanks for the work done by the organizing committee.

Barbara White read her annual report as Educational Secretary and introduced her successor, Eleanor Jane Carlin.

The following annual reports were read and accepted to be published in THE PHYSICAL THERAPY REVIEW:

Educational Committee, Dorothy Baethke; Inter-Professional Relations Committee, Lucy Blair; Public Relations Committee, Lella Dwyer; Public Laws Committee, Floy Pinkerton; Publications Committee, Louise Reinecke; Exhibits Committee, Jeanette Johnson; Nominations Committee, Lucille Daniels.

On the motion of Miss Speltz of Tennessee, the meeting adjourned until June 21 at 2 P.M.

June 21, 1949

The Speaker called the meeting to order at 2 P.M.

The Secretary called the roll.

Jessie Stevenson read her report as Representative to the Advisory Board of the American Registry of Physical Therapy Technicians and discussed recommendations she had made in the report as to how relationships with the Registry could be strengthened through the work of the national committees of the Association. She expressed her appreciation to the membership and to the Executive Committee for the assistance given her during her term of appointment.

The Secretary read the report of the annual meetings of the Executive Committee. These had previously been distributed to the delegates in mimeographed form.

The report of the House of Delegates Commit-

tee to study placement services was read by the Chairman, Margery Wagner. This report was accepted.

The speaker called for discussion by chapter members who had had experience with chapter placement service.

Barbara White asked if chapters had found placement service satisfactory and if they felt both local and national placement services should be continued.

Dorothy Wagner, Illinois, reported that the Illinois placement service had not been successful because of lack of applicants for positions available.

Margery Wagner, Northern California, reported that their chapter placement service had proved to be an excellent relations project in spite of the shortage of physical therapists.

Sarah Johnson of Connecticut asked if the Illinois chapter placement service requested assistance from national placement service.

Dorothy Wagner reported that the program had been developed locally and had resulted in poor relations because of inability to suggest candidates for positions.

Eleanor Bode, Delaware, asked if other chapters had had experience with placement of physical therapists through state employment commissions.

Hazel Furscott, Northern California, reported that the California Employment Commission appeared to be conducting efficient placement of social workers in that state.

Vida Buehler, Northern California, stated that placement service at the local and national levels appeared to be a question which should be determined by local needs and situations within each state.

Mary MacDonald, Massachusetts, reported that Massachusetts Chapter placement service had been successful. She felt that positions open within the area should also be reported to national placement service. She stated that their placement service had been operated only as a form of exchange with no attempt at selective placement.

The Speaker then called on Harriet Lee to present and discuss procedures recommended for consideration by the Nominations Committee. Mimeographed copies of these suggestions had been distributed to the delegates.

The points which Major Lee emphasized were participation by the membership in proposing candidates for nomination to office and the adoption of policies regarding selection of candidates. Chapters and individual members should actively accept a responsibility to submit names and qualifications for candidates for office to the Nominations Committee.

Helen Kaiser, Carolina, asked to hear discussion on the selection of directors. Miss Kaiser felt that directors should be selected from members who had had previous experience in executive committee meetings. She felt that committee chairmanships were excellent positions for acquainting candidates with the business and policies of the Association.

Nina Nichols, Massachusetts, suggested that one of the incoming directors be a person who had been a member for a number of years and that the second director be one of the newer members.

Miriam Rodenberger, Eastern Missouri, stated that she felt that other than committee chairmen should be considered for election to the Executive Committee.

Helen Kaiser, Carolina, stated that her thought had been that work done by committee chairmen was one method of evaluating candidates.

Mildred Evans, Massachusetts, said that she felt that the Executive Committee should be composed in part of those with previous experience on the Committee and in part of members new to the committee who had demonstrated executive ability elsewhere.

The Speaker called for reports on state legislation and the following reports were given:

California—Margery Wagner
Maryland—Florence Kendall
Washington—Carolyn Bowen

These reports will be sent to chapter legislation chairmen.

The floor was then thrown open for questions to the delegates who had reported. They answered questions and gave further suggestions in regard to the initiation of state legislation plans to register physical therapists. These suggestions will be edited and distributed at an early date by the Public Laws Committee.

On motion the meeting was adjourned until June 22, at 7:30 P.M.

June 22, 1949, 7:30 P.M.

The Speaker called the meeting to order.

The Secretary called the roll.

Mary Haskell reported on the progress of recruitment of physical therapists to work with infantile paralysis patients. She pointed out that the reason the Association had accepted this responsibility at the request of the National Foundation for Infantile Paralysis was the opportunity

provided to offer professional consultation. She reported that from May 1, 1949, to June 20, 1949, twenty physical therapists had been assigned to temporary emergency positions.

Miss Haskell called the delegates' attention to a memorandum which was to go out to chapters outlining the parts they might play in cooperating to combat poliomyelitis in their own areas.

Mildred Elson, Executive Secretary, gave a summary of events relating to the Association and her work during the past year. She spoke about federal health legislation as it related to aid to medical education. It was felt that aid to physical therapy education should be given consideration.

An appointment was requested by the American Physical Therapy Association and the American Occupational Therapy Association to discuss professional training with representatives of the Federal Security Agency. The appointment was granted and a meeting was held at the Federal Security Agency, Washington, D. C., on May 11, 1949.

Representing the Federal Security Agency were: Miss Mary Switzer, Administrative Assistant to Mr. Ewing, and Mr. Howard Kline, Administrative Assistant to Surgeon General Scheele, U. S. Public Health Service. The Association representatives were: Dorothy Baethke, Margaret Kohli, Lois Ransom, Clara Arrington, Marian Williams, Catherine Worthingham, Barbara White and Mildred Elson.

The next step was to request a hearing before the subcommittee of the Health and Labor Committee to speak in regard to the need for training more physical therapists.

Miss Elson said that copies of the material presented to the Senate subcommittee had been mimeographed and would be made available to Association members. This brief will be included in the Congressional Record.

Senator Murray listened to the brief attentively and made suggestions in regard to preparing a further memorandum stating desirable standards of physical therapy schools. Miss Elson emphasized that the hearing at which she represented the American Physical Therapy Association was only concerned with aid to the education of physical therapists and not with any other phase of federal health legislation. Miss Elson pointed out that developments of this type influenced the output of routine work from the National Office and must be given priority as the need develops.

Miss Elson then spoke of chapter responsibilities. Chapters must make additional efforts to integrate new members into chapter activities. Chapter news letters, changes of meeting places, district meeting, may all be considered as ways of doing this. The REVIEW is the medium through which news of Association business is made known to members particularly for those who are unable to attend chapter business meetings where national policies are discussed. This further underlines the responsibility chapter officers have to be thoroughly familiar with Association projects and present them fully at chapter meetings. Confidential information to chapters is sent out in memoranda when not indicated for publication in the REVIEW. The National Office staff plans to make more chapter visits during the coming year to give increased guidance to the development of chapter programs. Chapters would do well to review their program plans to include more membership participation with panel discussions and demonstrations.

Miss Elson then spoke of the fine work done by Barabara White, out-going Educational Secretary, and expressed her gratitude for the cooperation and support which the Educational Secretary and Polio Consultant have given.

Miss Elson paid particular tribute to the Massachusetts Chapter conference committees and the work they had done in the planning and management of this year's conference. She mentioned the type of program which had been planned by the committee whose chairman was Margaret Kohli. The audience signified their approval of the program by their applause.

The speaker called on the Executive Secretary to report on the status of the terms "physical therapist" and "physical therapy technician."

Miss Elson reported that conferences on this subject have been held with members of the Congress of Physical Medicine, the Advisory Council of our Association and educators. We are legally entitled by our article of incorporation in Illinois to be called physical therapists. Beyond this we plan to discuss with the Council on Medical Education and Hospitals of the American Medical Association our reasons for deserving to be called physical therapists. A member of our Advisory Council is to present the matter to the Educational Consultants of the Council on Physical Medicine and Rehabilitation of the American Medical Association. Physical therapists themselves should avoid the use of the term "technician" which it is felt connotes less than professional training. Conscientious ethical conduct supports the evidence in favor of the designation "physical therapist."

Miss McGarrett, Massachusetts, asked that a definition of "physical therapist" and argument for the use of the term "physical therapy technician" be prepared for distribution to the members. Miss Elson stated that a brief would be prepared in the National Office.

Mary McMillan, First President, spoke in support of the importance of using the term "physical therapist."

The Speaker reported on a poll which had been conducted by an individual physical therapist to determine whether or not physical therapists desired the Association to conduct a registry for members. This was done without the knowledge or authorization of the Association. The Speaker called on Jessie Stevenson to speak on this point.

Miss Stevenson commented that in considering association policies the prime objective should be the promotion of physical therapy. She pointed out the growth of interest in and need for legal registration of physical therapists in the individual states. She spoke about the establishment of a registry by the Congress of Physical Medicine and the uninterrupted development of the American Physical Therapy Association as the one professional organization for physical therapists. Miss Stevenson delineated the difference between the meaning of "registry" and "registration." The former is a qualifying organization giving an examination and is a temporary device to serve as a substitute for legal registration. The latter, state registration or licensure, is actual legal protection.

The Speaker called on the Executive Secretary to introduce the next item on the agenda, that of chapter projects.

Miss Elson who had previously spoken of chapter responsibilities now spoke of the importance of chapters developing personnel policies applicable to their own areas in the interest of social, economic and professional aims for the members. Miss Elson stated that the salary scale for physical therapists could be discussed collectively with the hospital administrators. Individual chapter groups should assume responsibility for implementing a salary scale commensurate with the current local economic situation.

In regard to student membership, chapters have an opportunity to be of service, and to use and develop student enthusiasm. The stimulation of improved interprofessional and public relations is a chapter project which may be sponsored by individual members by wearing the Association sleeve emblems and by chapters presenting professional exhibits and acquainting the medical profession with the highest standards of physical therapy.

In regard to territorial jurisdiction of chapter membership this is a difficult problem which will take some time to work out and which can be resolved only through consultations between chapters involved and the National Office.

Two considerations are paramount: service to members and service by members.

Chapter charters are to be mailed out upon receipt in the National Office of adopted, approved and signed chapter by-laws. The Association Directory is being prepared and will be published with geographical listings as soon as possible and consistent with other duties in the National Office.

In regard to membership cards most chapters have requested that they send out their own cards following receipt of membership dues by the National Office. Where chapters have not yet been formed, chapter dues are reserved pending the formation of a chapter in each state. Delegates from the following chapters asked questions in regard to their own chapter's territorial problems: Eastern Missouri, Eastern New York, New York, Virginia. Miss Elson answered their questions in light of national policies and state needs.

Kay Carr, Alabama, asked if a chapter is being formed in Mississippi and stated that until one is formed the Alabama Chapter would be glad to include members from Mississippi.

Mary MacDonald, Massachusetts, asked if it would be possible for members to belong to more than one chapter. Miss Elson and Miss Haskell felt that dues should be paid to chapters in the area of residence and that members might then become affiliated members of another chapter.

Mildred Evans, Massachusetts, asked a question regarding registration reciprocity.

Eleanor Jane Carlin, Pennsylvania, pointed out that this was a decision made by the state governments.

Kathryn Bier, Northern California, asked what could be done in hospitals where qualified physical therapists were asked to work under unqualified personnel.

Miss Elson replied that the correction of this situation will have to be achieved gradually by growth of professional influence and the enactment of legal registration.

Emmy Kylin, Ohio, stated that she felt it important for chapter jurisdiction to follow state boundaries in so far as possible but that chapters

should invite all members nearby to attend meetings.

Beatrice Schulz, Eastern Missouri, rose to discuss student membership saying that their chapter had always welcomed students and felt that part of the student's dues could be applied to REVIEW subscriptions.

Miss Elson pointed out that by paying dues students are given the feeling of participation and that student dues plus special subscription fee is less than the regular REVIEW price of $6.00. The REVIEW is, in the case of students, an adjunct to physical therapy textbooks valuable for reference and filing.

Dorothy Baethke, Pennsylvania, stated that interest in student membership stimulated interest in subscribing to the REVIEW. She suggested that further discussion regarding student membership be referred to the School Section.

Kay Carr, Alabama, felt that the REVIEW is invaluable reference material.

Adelaide McGarrett, Massachusetts, felt that student dues and subscription costs were a small daily amount. The Speaker referred further discussion to the School Section. She then spoke of House of Delegates bulletins and the use of the REVIEW to disseminate information to members and delegates.

The speaker then recognized Mary Nesbitt, Massachusetts, to read a resolution. Miss Nesbitt read the following resolution which incorporated policies in regard to the use of nonprofessional assistants in physical therapy departments. These had been prepared by a special committee: Mary Haskell, Esther Anderson, Florence Linduff, Mary Nesbitt, Sister Rosamunda; appointed by the President and were approved by the Executive Committee.

The resolution:

Whereas, in view of the existing shortage of qualified physical therapists, it is our responsibility to provide the most effective physical therapy services; and Whereas, we recognize the value of using nonprofessional workers in physical therapy departments, to free qualified physical therapists to devote maximum time to their duties requiring professional training and skill; and

Whereas, the use of nonprofessional workers in physical therapy departments should be developed in accordance with the standards of the profession; therefore,

Resolved, That it is the recommendation of the American Physical Therapy Association that in physical therapy departments where nonprofessional workers are employed, the following qualifications be considered as criteria for the selection of such personnel:

1. Graduation from high school;
2. Successful completion of a period of orientation and observation in the physical therapy department under the supervision of a qualified physical therapist;
3. General understanding of the purpose of work performed in a physical therapy department;
4. Ability to cooperate with department personnel;
5. Sympathetic understanding of patients;
6. Ability to understand and carry out directions;
7. Ability to maintain ethical conduct;

RESOLVED, That the following be considered suitable examples of work which may be performed by nonprofessional workers in a physical therapy department under the direction of a qualified physical therapist:

1. Assist patients in preparing for treatments;
2. Perform housekeeping duties and prepare cubicles, equipment and supplies for individual treatment, as directed;
3. Serve as messenger, as needed, to procure supplies and to transfer records;

RESOLVED, That a nonspecific title, such as "Clinic Attendant," be applied to nonprofessional workers in physical therapy departments.

Dorothy Voss, District of Columbia, moved the adoption of this resolution. The motion was seconded.

Janet Merrill, Massachusetts, asked if the examples of work were arbitrary.

Mary Haskell replied that these were to be considered only examples and that it had been agreed that each department would necessarily formulate its own policies. She pointed out that our professional responsibility was to advise that nonprofessional assistants should not treat patients.

Adelaide McGarrett, Massachusetts, questioned the use of the term "ethical" conduct in this resolution.

On roll call by the Secretary the resolution was adopted.

The Speaker announced the acceptance by the Executive Committee of the President's resignation to accept the position of assistant to the Executive Secretary.

The vice-president, Marguerite Irvine, succeeded to the presidency and it was necessary to elect a vice-president to fill the unexpired term. She

called on the chairman of the Nominations Committee to report.

Lucille Daniels reported the nomination of the following candidates to fill the unexpired term of one year as vice-president: Mary Nesbitt, Kathryn Kelley, Harriet Lee.

There were no nominations from the floor and in motion the nominations were closed.

The Speaker then declared a recess for the purpose of delegates caucus and the candidates each stood to be recognized.

After a brief recess, the Speaker called the meeting to order and the nominees for the three-year unexpired term of office of director, Louise Bailey and Agnes Snyder, rose to be recognized. There were no nominations from the floor for the office of director, and nominations were closed.

The Speaker appointed the following tellers: Ruth Langley, Mabel Waynich and Virginia Greenwood.

The Secretary explained the system of voting by the prepared ballots which the tellers distributed.

When all had voted who wished, the tellers collected the ballots.

The Speaker announced the last item on the agenda; selection of conference sites for 1950 and 1951 and called on the Executive Secretary to speak on the subject.

Miss Elson mentioned the choice of last year's House of Delegates for a country type conference and the increasing difficulty in finding accommodations for our conference. The advantages of different types of conferences were outlined in a House of Delegates memorandum during the last year. She described a third type of conference that might be held at a university which would have features of both the city and country type. She pointed out that before coming to the 1950 conference delegates should investigate local facilities in their own areas in anticipation of giving invitations for the 1952 conference.

The speaker then called for invitations for the 1950 conference.

Marguerite McEachern, Ohio, extended an invitation to meet in Cleveland in 1950. There were no other invitations for 1950. It was voted to hold the 1950 conference in Cleveland, Ohio.

Hilda Traina, Virginia, moved that, if facilities were not available in Cleveland, the Executive Secretary be empowered to find a place for the 1950 conference. This motion was carried.

Janet Merrill, Massachusetts, inquired about the attendance at this year's conference. Miss Elson answered that the total registration to date was about 770 with more than 560 members registered. (Note: Final official registration: Members 597. Guests 206.)

Adelaide Fowler, Ohio, asked about hotel and meeting space used and reported that there were ample facilities in Cleveland.

The speaker then called for invitations for the 1951 conference.

The following invitations were received: Colorado, the University of Wisconsin, the State of Washington.

Beatrice Schulz, Eastern Missouri, issued an invitation from her chapter to meet there in 1952.

The following delegates then spoke in favor of their conference invitations: Norma Grundemann, Wisconsin; Mary Lawrence, Colorado; Carolyn Bowen, Washington.

A recess was then declared for caucus by the delegates. The speaker called for the vote on a conference site for 1951.

The Secretary called the roll and announced that Colorado and Wisconsin had a plurality vote. The speaker asked if the Delegates wished to vote again and they signified they desired to do so. The Secretary called the roll and announced that Colorado had a majority vote.

The Executive Secretary announced that a bookbinding company in Chicago had made an attractive offer to bind volumes of the REVIEW and that an official announcement regarding this would be published in a forthcoming REVIEW.

The Speaker announced the results of the elections.

Louise Bailey for Director for three years.

Harriet Lee for Vice-President for one year.

The Speaker asked Major Lee to take her place on the platform as Vice-Speaker of the House of Delegates. The Speaker expressed appreciation to Cecelia Leverone for acting as parliamentarian at this year's conference.

Speaker Singleton called for a rising vote of thanks to the Massachusetts Chapter which acted as hostess for the conference. The House of Delegates rose and applauded.

Marguerite Irvine was asked to stand and accept a rising vote of thanks for undertaking the appointment to succeed to the presidency.

No further business was brought before the House which on motion was then adjourned sine die.

Abstracts

John S. Coulter, M.D.

Prescription of Rest in Bed in Infectious Diseases

J. C. de Wit. In NEDERLANDSCH TIJDSCHRIFT V. GENEESKUNDE; AMSTERDAM, January 29, 1949. Abstracted in JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 140:15:1245, August 13, 1949.

De Wit discusses the advisability of prescribing rest in bed for patients with internal disorders, particularly for those with febrile diseases. He investigated the incidence of thrombosis and embolism in 1,200 patients, including 300 each in four different age groups. He admits that these groups are too small to arrive at definite conclusions, but he found that in the group of patients over 60 years old, there is a high incidence of thrombosis and of lobar pneumonia and that these and other complications, such as disturbances in bowel function and in retention of urine, are reduced when rest in bed is not continued for prolonged periods. The psychic factor is important in that patients who are allowed to get up earlier usually feel better. The author allows the patient to get up frequently on the second day of an acute infectious disorder, but usually he waits until the temperature has decreased to 39 C. (102.2 F.). He allows the patient to sit up twice a day for fifteen minutes in a comfortable chair, and he advises against the use of the bed pan. On later days he lengthens the periods of sitting up. He compares a group of 1,200 patients treated in this way with the aforementioned group of 1,200. He found that early mobilization reduces considerably the number of thromboses as well as the total duration of the disease, while no disagreeable complications were observed. Early mobilization did not influence the course of the fever. The author advises closer study of the influence of early mobilization in diverse internal anomalies.

Psychosomatic Medicine

W. Taliaferro Thompson, Jr., M.D. In SOUTHERN MEDICINE AND SURGERY, 111:6:166, June 1949.

Medicine has experienced many growing pains in its development from the earliest days of mysticism and magic, ritual and religion, to the present-day scientific understanding of etiology, physio-pathology, diagnostic methods, and therapy. The most dramatic advances have been made in relatively recent times in what may in truth be called the machine age in medicine.

Weiss and English have classified the patient with whom psychosomatic medicine is concerned into three groups. The first group is that large number of sick people, comprising possibly a third of the patients who consult a physician, who are not insane and yet do not have any definite bodily disease to account for their illness.

Their second group, another third of those who seek medical aid, comprises those who have symptoms that are in part dependent upon emotional factors even though organic findings are present. This group, obviously, presents major problems in order that both psychic and somatic factors may be properly dealt with, and a proper perspective obtained as regards both diagnosis and treatment.

Group three comprises disorders usually considered wholly within the realm of pure physical disease, but in which the emotional factor has long been recognized to be of importance, and in which more recent work has indicated that the emotions may be of particular significance in etiology as well as in treatment. This group consists of the diseases of the vegetative nervous system, with asthma, migraine, and essential hypertension, as examples.

Painful Amputation Stumps and Phantom Limbs: Treatment by Repeated Percussion to the Stump Neuromata

W. Ritchie Russell, M.D., F.R.C.P. In BRITISH MEDICAL JOURNAL, No. 4614, p. 1024, June 11, 1949.

The otherwise intractable pains and jactitations which sometimes occur in amputation stumps and phantom limbs may be abolished by repeated percussion of, or pressure on, the stump neuromata.

Repeated treatment by hammering or by a mechanical vibrator has proved to be highly successful in all of seven cases treated.

During treatment many interesting sensations appear in the phantom.

Some Problems of Rehabilitation Following Injuries to the Foot and Ankle

Charles V. Hatchette, M.D. In SOUTHERN MEDICAL JOURNAL, 42:7:604, July 1949.

After complete healing of fractures and soft tissue damage has occurred, but continued swelling with stiffness of the ankle joint persists, active and passive exercises aid in recovery of function. Inclined boards prove very satisfactory for rehabilitation of ankle motion and patients should be advised frequently of the importance of this exercise. By this method, ligaments are strengthened, muscular action is revived, and fibrotic joints are broken up. This is by far the most satisfactory method of rehabilitation and should be practiced more frequently than is usually done. A competent nurse or physical therapist may instruct these patients. Industry probably would find the establishment of rehabilitation centers advantageous, not only because of earlier return to work, but also because of considerable savings in compensation payments and medical fees. Whirlpool baths, the use of massage, and other physical methods of rehabilitation are used advantageously in fracture centers, where frequent injuries justify large scale therapeutics. In the so-called after-treatment of fractures to the foot and ankle, it is Clay Ray Murray's belief that it is not the role of physical therapy to rehabilitate the patient. It should be used only to make it easier for the patient to rehabilitate himself.

New Rehabilitation Program

In BULLETIN OF U. S. ARMY MEDICAL DEPARTMENT, IX:7:551, July 1949.

A new rehabilitation program designed to effect more rapid convalescence of hospitalized airmen was initiated by the U. S. Air Force on July 1. Medical science has proved that the period of convalescence may be reduced by occupational therapy as a means of providing a more rapid restoration of capacities. The new program will go a step further and provide part-time work fitted into the stage of convalescence of the patient and his regular duty assignment.

The Topographic Pathology of the Cerebral Lesions of Acute Poliomyelitis in Man: I—The Medulla Oblongata

James H. Peers, M.D., and R. D. Lillie, M.D. In THE AMERICAN JOURNAL OF PATHOLOGY, 25:4:725, July 1949.

In a study of the anatomic distribution of the lesions of acute poliomyelitis in 42 specimens of the medulla oblongata it was found that lesions of maximum severity are regularly encountered in the reticular substance, nucleus ambiguus, and supraspinal and spinal accessory nuclei. Other somatic and bronchial motor nuclei unaccountably present much less severe and constant lesions.

Nuclei of the sensory components frequently contain a few small lesions. Such lesions are somewhat more numerous and severe in the somatic than in the visceral sensory nuclei. The occurrence of single necrotic nerve cells with typical reaction in each of these nuclei in a few specimens indicates that the cells of the sensory nuclei are not completely refractory to the virus of poliomyelitis.

While a few individual specimens presented moderate quantitative differences from the average pattern of lesions, the series as a whole gives a general impression of uniformity. Within the series no grouping is discernible that suggests an essential difference of pathogenicity of supposedly various strains of virus. Also, there are no consistent differences in disease pattern corresponding to the stated duration of illness, or to whether it began with bulbar or spinal symptoms. We are obliged to conclude that death in poliomyelitis occurs when a certain and fairly constant amount of damage is produced in the medulla, and that the final pathologic end-result, in the medulla at least, is relatively uniform, and apparently independent of the route of spread of the virus, or of the speed with which the vital centers are overwhelmed and disorganized.

The Care of Polio Patients is a Job for the General Hospital

Joseph G. Molner, M.D. In THE MODERN HOSPITAL, 72:6:56, June 1949.

In part, objection to the admission of poliomyelitis patients to general hospitals has been based upon the fact that adequately trained personnel and equipment have not been available. Modern methods of treatment of infantile paralysis do require special types of equipment and employment of physical therapists trained in the use of this equipment, as well as in application of modern therapeutic technics.

With the recent realization of the important role of physical therapy in the treatment of disease, in both the acute and convalescent stages, it is virtually mandatory that every hospital have this service available. A well trained physical therapist should be in attendance and should be provided with adequate equipment, such as hot pack machines, sterilizers, treatment tables, wool and rubberized material for packs, and, of course, respirators and aspirators.

Good physical therapists, with little additional training, can be indoctrinated in the use of this special poliomyelitis equipment and the application of modern therapeutic methods. The use of hot packs represents but a small part of the therapy regimen. Stretching and passive exercises, proper positions and supports and so-called "reeducation in physical movements of the patient" are probably more important. They are the usual responsibilities of physical therapists and are looked upon by physicians as the most important aspect of modern infantile paralysis treatment.

There is no doubt in the minds of the majority of physicians, other professional groups, and hospital administrators that proper management of poliomyelitis requires the availability of the full facilities of a well organized, well staffed and well equipped hospital, that the staffs of these hospitals can be adequately trained in the care of poliomyelitis, and that equipment can be made available without a great deal of additional expense. There is no doubt in the minds of these groups that availability of *immediate* hospitalization is imperative and that long transportation to such facilities and the element of time involved multiply the risk to the patient in death and serious complications.

If there is need for education of the hospital administrator in these facts, there probably is equally as great a need for education of the medical staff, nurses and lay personnel of institutions.

F.C.C. Rules and Regulations on Diathermy and Television Prevent Chaos in Radio Communications

Howard A. Carter. In THE MODERN HOSPITAL, 73:2:64, August 1949.

The Federal Communications Commission has announced rules and regulations regarding the manufacture and use of diathermy equipment. These rules and regulations indicate that there are generally two methods of operating diathermy equipment in compliance with the rules for equipment manufactured after July 1, 1947. The first method is to operate within assigned frequency bands using equipment that is either "type-approved" or certified by a competent engineer in accordance with the applicable sections of the rules. The second method is to operate on any frequency provided the equipment is in a shielded room with a filtered power supply and all radiation on any frequency is limited to 15 microvolts per meter at a distance of 1000 feet or more from the diathermy equipment. Operation in this manner also requires certification by a competent engineer.

Some discussion has been raised as to the relative merits of (1) the health of the nation and (2) the protection of the public by the police. While a physician may be treating a disease, the police might be hampered in protecting the property of the public by interference caused by a diathermy apparatus. Fortunately, problems of this nature, if indeed they exist, can now be overcome by compliance with the regulations of the Federal Communications Commission.

Periodic Disease

Hobart A. Reimann, M.D. In JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 141:3:175, September 17, 1949.

Over 50 cases of periodic disease including periodic fever, periodic abdominalgia, periodic neutropenia, periodic arthralgia and periodic thrombopenia have been collected. They, together with many other recorded cases of periodic arthralgia (intermittent hydrarthrosis), periodic purpura (Schönlein-Henoch syndrome), periodic (angioneurotic) edema, and periodic paralysis are tentatively grouped as periodic disease and probably have a common cause. A hereditary aspect is apparent in many instances. A vasomotor disturbance seems to be the most obvious cause of the various clinical phenomena, but the reason for its regular rhythm is unknown. Theories as to the influence of infections, allergy, endocrinologic or epileptic factors are inadequate. Until further knowledge is attained, it is simplest to regard periodic disease as a manifestation of a rhythm of life.

Rehabilitation in Chronic Disease

Harper E. Richey, M.D. In KENTUCKY MEDICAL JOURNAL, 47:6:228, June 1949.

In this report the author was particularly interested in the problem of chronic disability from medical diseases, namely: heart and vascular system, lungs, neurological, rheumatic fever and other acute infections, and particularly the convalescence from acute and chronic diseases. One of the principal causes of increasing prevalence of chronic disease has been the great advance medically and surgically which has prevented death and produced an aging population.

Bed rest and idleness are not conducive to physical fitness. The human body does not remain static. Bed rest brings about deconditioning. Dr. Ancel Keys at the University of Minnesota, working with conscientious objectors, has shown that immediately after six weeks rest in bed, except for trips to the bathroom one time daily, there results only a small loss in strength but marked loss of coordination and the ability to do work.

The author wonders what physicians with no special training in this particular field can do with the usual chronic cases, and suggests the following:

Develop a good knack at motivating all patients, particularly those who are to be classed as chronically disabled.

Teach them to live fully and completely as self-sufficient lives as possible with their disability. Find out what they can do in terms of work in view of their disability. The things they do well. The kind of work they formerly did.

Teach the patient that he, with your help, is the person who is going to have to do this work.

In acute medical cases, the first afebrile day, start your patient on bed exercises, calisthenics, deep breathing exercises. Passive and active arm and leg exercises. Abdomen and buttock and stretching exercises, and practice as early ambulation as possible.

If your case is seen within the first 8 hours after hemorrhage, thrombosis, or embolism, a stellate block on the side involved is of great aid. Exclude those cases for rehabilitation in which the rehabilitation process cannot keep up with the pathological processes such as occur in malignant hypertension and cardiac insufficiency. In every case there are both physical and psychological factors to be combated. General principles in care include the cause, site, and extent of the lesion and the treatment of sequelae and active physical and psychological treatment. The prevention of pressure sores with a frequent change in position, attention to the bladder and bowel, oral hygiene, adequate fluids, the avoidance of sedation when possible. Frequent passive motion of all joints must be instituted. The paralyzed upper extremities must be outside the covers. The paralyzed lower should be protected by a cradle. When the patient becomes conscious he must be reassured and interested in his recovery. Pronation and supination of the forearms and extension of the elbow should be insisted upon. Were it possible, group exercises in chronic hemiplegics, followed by occupational therapy would be of great value in stimulating not only recovery but a sense of competition and companionship which lessens boredom and loneliness. Alternate heel raising, early walking exercises, using a football, spinning and pounding with the affected hand, using a tennis ball for gripping, pounding and knocking; chair exercises, standing and sitting and finally, heel and toe walking.

There are two important groups present in patients with heart diseases.

(1) Chronic cardiovascular disease in which exercise is prescribed for rehabilitation following acute vascular accidents, such as coronary thrombosis or hemiplegia. In such cases, long bed rest following the acute episode is considered.

(2) Ambulatory chronic cardiacs, often with hypertension and coronary artery disease, with or without angina.

In the first group, exercise is graduated. Massage, passive motion, respiratory exercises, followed by Schott resistance exercise all facilitate the return of the venous flow and aid in cardiac work. In such, any movement of the body can be greatly resisted. The next step is graded work as advocated by the Oertel method of exercise.

There have been too few well controlled studies on the effects of exercise on the damaged myocardium. Stair exercise is controlled by the advice to go up one stair at a time. Walking down stairs is valuable especially for elderly patients for it is not only a resistance exercise but helps in improving balance. A cane is of great value, and if properly selected, confers a feeling of safety. It could even be a sartorial asset. Perfection can be obtained by its use in front of a mirror at home.

A resume of the important contributions to this work has been given with some of the physiological changes which take place in the body at bed rest. Suggestions as to how this work can be fostered throughout the country by institution of various rehabilitation centers, etc., training of personnel, has been enumerated with a few suggestions in the care of chronic medical conditions.

Stocking-Holder for the Stiff-Jointed

L. C. Dundas Irvine. In THE LANCET, No. 6570, p. 199, July 30, 1949.

One of the greatest hardships of the man or woman with severe osteoarthritis or ankylosis of the hip or knee-joint is the inability to put on their socks or stockings and shoes unaided.

A simple apparatus has been devised, which consists of two light strips of metal joined as a T on the flat, the shorter piece being curved into a half round. This half round is furnished with three studs, placed one in the center and one at either end; and three lengths of elastic, fixed by a screw to the handle, carry ordinary suspender fastenings which will clip on to the studs.

The user has only to fix the top of the stocking or sock on the three studs when it will hang in an open loop into which the foot can be easily inserted and the whole drawn up the leg. The handle or long end, shaped like a shoe-horn, renders equally easy the slipping on of an elastic-sided shoe or a court shoe. Unfortunately it has not so far been possible to devise an instrument to draw tight and tie shoe laces.

Prediction of Unequal Growth of the Lower Extremities in Anterior Poliomyelitis

Allan J. Stinchfield, M.D., John A. Reidy, M.D., and Joseph S. Barr, M.D., Boston, Mass. In JOURNAL OF BONE AND JOINT SURGERY, 31-A:3:478, July 1949.

Of 166 adults in whom poliomyelitis developed before the age of eleven, varying degrees of muscle power and shortening were present in the lower extremities. There was no specific relationship between the age of onset and the amount of discrepancy in limb length. There was, however, a definite relationship between the relative muscle strength in the two extremities and the discrepancy in limb length. These data may be utilized clinically in predicting the amount of shortening that will occur in a patient having poliomyelitis before the age of eleven.

Acute Anterior Poliomyelitis: Case Report with Comments on Therapy

Wm. H. Izlar, M.D., and John E. Wright, M.D., Miami. In THE JOURNAL OF THE FLORIDA MEDICAL ASSOCIATION, 36:2:98, August 1949.

Aware of the dangers of conclusions based on the analysis of one case, we were prompted to report this case and its apparent response to the therapy given because of its remarkable correlation with some ideas presented in the experimental literature.

A case of ascending poliomyelitis of a bulbar type is presented in which the patient recovered without residual paralyses on a continuous regime of coramine and vitamin C. No definite conclusions can be made on the analysis of one case.

New therapy for poliomyelitis and the therapy used in this case are discussed with the conclusion that our treatment caused an increase in metabolism which may have served to protect neurons from the poliomyelitis virus.

Some Therapeutic and Neurological Aspects of Peripheral Nerve Injuries

W. R. Henderson and D. Taverner. In THE LANCET, No. 6565, p. 1084, June 25, 1949.

The purpose of this paper is to draw attention to certain therapeutic and neurological aspects of nerve injuries which we feel are not emphasized sufficiently, and about some of which our conclusions differ slightly from those of others. It is based on experience in treating over 400 nerve injuries in prisoner-of-war hospitals in Germany during 1940-45; detailed observations cannot be given because the notes were lost in Germany.

Stiff Joints.—The prevention of joint stiffness is the first essential in the management of nerve injuries. Frequent full-range passive movement is more important than other forms of physical therapy, such as splintage, massage, and electrical treatment, and in our experience neglect of this simple preventive did as much harm as lack of operation facilities.

Stretching of Muscles.—We believe that the stretching of muscles does not, to any serious extent, prevent recovery, and that the importance of avoiding it has been exaggerated. Unsplinted paralyzed muscles are rarely, if ever, overstretched beyond the normal limit of relaxation; and it is unlikely that such an extensible tissue, even though paralyzed, suffers greatly as a result of stretching within the normal range, at least not sufficiently to prevent good recovery if the muscle is correctly reinnervated.

In the special circumstances of our experience it seemed that, when splints were not used, the reduced risk of joint stiffness more than compensated for any harmful effect of stretching the muscles. We do not, however, advocate the abolition of splintage, because it is required to prevent shortening of the unrestrained normal muscles, and this we regard as the main reason for its use. Experience led to the conclusion that stretching of muscles will not prevent recovery if they are correctly reinnervated and that poor recovery is due to axonal confusion rather than to structural changes in stretched muscles.

Massage and Electrical Treatment.—Some patients had massage and a little faradism, but none had galvanism.

Distance of regeneration, lack of physical therapy, and even a reasonable delay in operating are much less detrimental than incorrect reinnervation, and, in our opinion, they are not the main factors, as is sometimes implied, responsible for the poor recovery of distal muscles after high severe lesions or sutures. It has never been shown that electrical treatment improves the eventual recovery after severe lesions or suture, and it is unnecessary after axonotmesis.

If we may speculate, the unequal recovery of proximal and distal muscles could result from disturbed function at three levels of neuromuscular activity: (1) the muscles; (2) the nerves, and (3) the brain and spinal cord.

(1) Muscles.—There is no evidence that the degree of muscular recovery depends on inherent differences between the various muscles or their nerves.

(2) Nerves.—Nerves to distal muscles may well contain a greater percentage of afferent fibers than do those to proximal muscles, which would increase the wastage of efferent fibers owing to axonal confusion.

(3) Brain and Spinal Cord.—Central mechanisms for the initiation and control of movement require a good flow of afferent information, especially from muscles, to regulate the outgoing motor impulses, particularly to the distal muscles for their complicated actions.

Inequality of functional recovery is seen not only as between various nerves but also within the territory of one nerve after high lesions, when there may be a striking difference between proximal and distal muscles. This disparity does not appear to depend on the length of regenerating axons, the size of muscles, or, within limits, delay in suture or degeneration of muscles; nor does it seem to depend entirely on insufficiency of efferent fibers through being stranded or misdirected at the lesion. Its distribution resembles that of the muscular weakness in hemiplegia or cerebral origin, and it corresponds to the degree of normal voluntary control of the various muscle groups. It seems that after nerve injuries the disabling effect of defective central control and coordination, through loss and confusion of afferent information to the cerebral cortex, is greater for the more complicated distal functions than for proximal functions.

In addition to axonal confusion and defective cerebral control a third factor is present, which also cannot be eliminated—i.e., incomplete maturation of regenerating fibers in the peripheral segment. There is ample experimental evidence that complete maturation and full recovery of function never occur after the axon sheaths have been broken.

As regards the muscles, however, we believe that, within reasonable time limits, structural changes in denervated muscle-fibers have much less effect on recovery than have the factors already mentioned.

Fatigue and Neuromuscular Block in Mammalian Skeletal Muscle

G. L. Brown, F.R.S., and B. D. Burns. In PROCEEDINGS OF THE ROYAL SOCIETY, Series B, 136:883:182, June 23, 1949.

The tetanic tension developed by a muscle, excited through the motor nerve with repeated maximal stimuli, declines as stimulation continues. Provided that the stimulation is not unduly prolonged or of too high a frequency, the decline in tension is reversible, and repetition of the same stimulation produces the same tension changes. Stimulation of a mammalian nerve-muscle preparation for some 2 hr. at frequencies as low as 1 in 10 sec. admittedly produces a series of twitches whose peak tensions gradually decline, but this fall of tension is not reversible within the limits of an acute experiment. In this paper we shall restrict the meaning of the term "fatigue"; it will be taken to imply a decline in tetanic tension which is reversed by allowing the muscle to rest for about 10 minutes.

Exercise in the Bath: Evidence of its Value as Compared with Exercise in the Air

F. R. Togna. In THE BRITISH JOURNAL OF PHYSICAL MEDICINE, 12:4:105, July-August 1949.

Advantages of exercise in water.—This method of exercise offers the ideal solution to the problem of breaking through the vicious circle of growing decadence, by enabling everyone to make better use of the oxygen in the air breathed. By exercising the body in the bath, even very weak persons are enabled to take exercise which helps to restore, as far as possible, their bodily energy. This will become obvious when the nature of the gymnastics is considered.

Each exercise takes the form of a rhythmic movement, designed to bring every muscle of the body into concerted action and the body as a whole into a state of balanced activity; but, unlike other forms of activity, the bath movements are not strenuous. One is amazed to find that, even when they are performed vigorously, the pulse rate goes up by only a few beats. This is due to the nature of the exercises and to the fact that the buoyancy of the water almost entirely overcomes the force of gravity. The specific gravity of water is about the same as that of the body. In other words, the natural weight of the latter, or any part of it, is reduced to a minimum, the body being largely sustained by the water.

The object of performing the exercises in water is to counteract the gradual loss of elasticity by relieving the muscle of the muscular tension necessary to support the weight of the body in air. By means of the fuller muscular relaxation so obtained, the three essential properties of muscle—extensibility, retractility, elasticity—are provided with an economical action, capable of delaying the loss of muscular tone. The bather can find an indication of the valuable result obtained in his own case by taking his pulse rate before and immediately after exercise. He will find that his pulse rate is increased only by a few beats, however long the exercise has been continued, whereas, by attempting the same muscular movements in air, he will find himself exhausted within a minute or two, however young and healthy he may be.

Physiological effects.—As a result of the general circulation promoted by my system of exercise in the bath, oxygen and nourishment are more evenly carried to, and shared by, the tissues, through the maximum expansion of the lungs and consequent contraction and relaxation of the abdomen. In harmony with this action the blood in the big vessels of the abdomen, as noted above, is squeezed out and pumped into them again rhythmically. Congestion of the abdominal organs is prevented or relieved. The normal functions of the liver, pancreas, genitalia and endocrine glands are preserved. The warmth of the surrounding water causes the capillaries of the skin to open, with the result that the skin becomes better nourished and more useful in quality, and the cleansing which takes place through its active pores assists the work of the kidneys.

The Management of Recovery from Venous Thrombosis in the Lower Limbs

John Homans, M.D. In SURGERY, 26:1:8, July 1949.

This report is based upon a study of fifty-five cases exhibiting the quiet stage of venous thrombosis, or phlebothrombosis in the lower limbs. It was hoped to learn how the management of the immediate and remote convalescence had influenced the altimate state of the affected leg or legs. A few patients were treated by conservative measures alone, most were subjected to some form of vein interruption, and a smaller number to anticoagulant therapy. Though many of these patients had suffered from pulmonary embolism, no attempt is made here to determine the relative lifesaving value of the various procedures, the ultimate fate of the leg being the only consideration. Well-developed obstructive thrombophlebitis is not included. The author has previously discussed the late results of this disease.

Experience with cases of early quiet thrombosis (phlebothrombosis) treated by vein interruption or by anticoagulation indicates that:

(1) The consistent use of gravity drainage, graded exercises, bandaging, and the proper balance between dependency and elevation is of advantage in establishing a permanently efficient collateral venous return from the lower limbs, and is especially required after an extensive thrombosis.

(2) The connections of the deep (profunda) with the superficial femoral vein usually are intimate and occasionally the two systems are practically one, but the combined systems have unsatisfactory collateral connections with higher veins.

(3) The normal deep femoral system of veins may be expected to offer a good collateral pathway as long as the common femoral vein is open, whether or not the common femoral has been invaded by thrombosis.

(4) Surgical obstruction of the common femoral vein necessarily and seriously opposes the establishment of an effective collateral circulation, but may be compensated for by especially prolonged physical therapy measures during the immediate and remote convalescence.

Uses and Abuses of Physical Therapy in Industrial Medicine and Surgery

Richard Kovacs, M.D. In NEW YORK STATE JOURNAL OF MEDICINE, 49:16:1934. August 15, 1949.

Extensive experience during two world wars and the intervening three decades has fully established the indications and methods of physical treatment measures following industrial accidents and diseases.

It behooves all physicians caring for industrial injuries and illness to be informed about the possibilities of properly instituted and applied physical and occupational therapy for the promotion of anatomic and functional recovery and comfort in suitable cases. The indications for such treatment have been fully established, and many of the pitfalls can be avoided by consistent cooperation among all factors concerned.

Possibilities of Hydrotherapy in a Psychiatric Hospital

Paul A. Nelson, M.D., and Donald J. Erickson, M.D. In ARCHIVES OF PHYSICAL MEDICINE, 30:8:526, August 1949.

Both stimulative hydrotherapy, in the form of the needle spray and the Scotch douche, and sedative hydrotherapy, in the form of the wet pack, tub bath or therapeutic swimming, can be utilized to great advantage in the treatment of psychiatric patients. Of these three types of sedative hydrotherapy, therapeutic swimming should be recognized as the most effective. It is particularly indicated in the treatment of the young patients who invariably look upon therapeutic swimming as a recreational activity and upon the wet pack and tub bath as forms of restraint and punishment. However, there is still a definite and important role for the latter forms of sedative hydrotherapy in the treatment of patients for whom therapeutic swimming is contraindicated. On the basis of our experience, we recommended that all psychiatric hospitals be equipped to provide a program of therapeutic swimming for the physical sedation of hyperactive and assaultive patients. Such a program is a sound investment in rational, progressive therapy.

Treatment of Dendritic Keratitis

James H. Delaney, M.D. In THE PENNSYLVANIA MEDICAL JOURNAL, 52:8:845, May 1949.

Moist heat.—Hot compresses do help to relieve pain and as such are an adjunct to the treatment. They probably have very little influence on the course of the disease.

Infra-red rays.—They reduce pain.

Ultraviolet rays.—Duke Elder says that this treatment is of no value. Gundersen says that the rays will not penetrate deeply enough to destroy the virus. We have used a concentrated ultraviolet lamp in a series of cases without any apparent help, and have now discarded this method of treatment.

New Concepts in the Management of Cerebral Palsy

Weston Cook, M.D. In THE JOURNAL OF THE SOUTH CAROLINA MEDICAL ASSOCIATION, 45:8:248, August 1949.

A special exercise and training program is the crux of what might be termed the new concept of the treatment of cerebral palsy. The basic idea underlying this training program is that in the presence of a normal mentality, even though the child may be unable to learn basic activities automatically because of the physical handicaps present, still it is possible to teach this child by a repetitive exercise program. Thus, he learns the activity in much the same manner that a normal child learns higher skills, such as swimming.

So, after necessary surgery and bracing are provided, the child is considered from the standpoint of what goals are to be sought. Can he be taught to walk? Or is the handicap too great, and would it be wiser to accept a wheel-chair life and work for arm function for this activity?

Once the goal is determined, a program of exercise is set up with the assistance of trained technical specialists —physical and occupational therapists. With this program weakened muscles are strengthened, involuntary motions are diminished by relaxation and, gradually, motion patterns become habits.

In addition to physical and occupational therapy, many cerebral palsied children will need help in learning to speak properly.

The Patient with Bulbar-Respiratory Poliomyelitis

Frederic J. Kottke, M.D., and William G. Kubicek, Ph.D. In THE AMERICAN JOURNAL OF NURSING, 49:6:374, June 1949.

The polio patient with bulbar and respiratory paralysis presents a number of serious nursing problems. Bulbar involvement with paralysis of the muscles of the palate, pharynx, and larynx makes it difficult or impossible for the patient to maintain an open airway. Partial or complete obstruction of the airway through the nose, pharynx, larynx, and trachea results in hypoxia (insufficient oxygen), aspiration of mucus into the trachea and lung, and pulmonary edema. When mucus or saliva is aspirated atelectasis and pneumonia result.

Paralysis of the respiratory muscles makes assistance in ventilation imperative, or the patient will suffocate. At the present time adequate assistance to respiration can be obtained only by placing the patient in a tank-type respirator which immobilizes him almost completely. This adds further hazards to survival. It is difficult to reach the patient. It is hard to treat him in any position except on his back. Prolonged immobilization on the back results in pulmonary congestion and pulmonary edema with a progressive decrease of useful lung volume. The forced inspiration of the respirator results in aspiration of material from the pharynx into the trachea and the lung.

The nurse who is caring for a polio patient with bulbar-respiratory polio needs to be on the alert constantly for signs that the patient is not getting an adequate exchange of air. The earliest symptoms of inadequate ventilation or asphyxia usually are due to accumulation of small amounts of carbon dioxide. One of the first signs is an increase of the pulse rate. The pulse rate is a very sensitive index of asphyxia, and often precedes by a number of hours other important signs of asphyxia or hypoxia. Mild asphyxia also produces apprehension in the patient long before he has reached the stage where there is any cyanosis. A rise of body temperature may be a sign of a decrease of oxygen saturation in the blood. When the patient's temperature begins to rise, he should be examined carefully to see that it is not due to partial obstruction of the airway with an inadequate supply of oxygen. Cyanosis is a very late sign of inadequate oxygenation. When it occurs it means that the patient has already passed the danger level of hypoxia. Consequently, care of the patient should be such that cyanosis never develops.

Training for Childbirth

Herbert Thoms, M.D., and Frederick W. Goodrich, Jr., M.D. In JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 140:16:1256, August 20, 1949.

In considering the recommendations of those who advocate the use of procedures aimed at physiologic, or "natural," childbirth one should understand that the technics suggested are concerned with more than parturition itself. In its broad application it represents an attempt on the part of those who care for pregnant and parturient women to gain further understanding of the physiology of pregnancy and labor, including its emotional aspects, so that these functions may be viewed with better understanding and less apprehension by patients and greater skill may be developed by those who attend them.

Certain misconceptions exist which, in most instances, are concerned with pain and anesthesia, the impression being that the procedures recommended render labor painless and that anesthetics are not used. None of the proponents of these technics has suggested that labor should be conducted without anesthetic aids or that it can be made devoid of pain.

The effect of emotions, especially anxiety and fear, on the woman in labor has been recognized for a long time and is no recent discovery.

In view of the vast amount of effort expended on health education in general, it is surprising how little has been done to educate women for childbirth. Many of the books which have been written for the expectant mother are chiefly concerned with the hygiene of pregnancy and prenatal care; they do not emphasize or delineate the role of the patient as an active participant in delivery. Furthermore, but little attempt is made to allay the traditional fear with which most women approach childbirth.

The important part played by emotion in increasing the sensitiveness of women to pain in labor has been emphasized by Grantly Dick Read, who points out that education of women for childbirth can serve a twofold purpose, that of allaying fear and that of preparing the patient to perform her part in the labor process.

The educational program which has been developed in our clinic is dual in its nature. First, the patient, attending small classes, is instructed in the anatomy and

physiology of pregnancy and labor. Second, the patient is trained in the use of her body to aid the natural forces of labor. In this the use of certain muscle groups is learned and the art of (muscular) relaxation practiced. Women who have been educated in this manner also have aid in putting the training into practice during labor by experienced attendants who have sympathy toward the plan. This reinforcement is referred to as "support" and is given by both nurses and physicians. In England the specially trained physical therapist is used for a considerable part of such support.

This program at present consists of one lecture and two exercise classes given in early pregnancy and one lecture and two exercise classes given in the last half of the third trimester. At the first lecture, which is given by a physician to a group of 10 to 20 prospective mothers, the plan of education to be followed is outlined, emphasis being placed on the importance of a knowledge of the basic facts of pregnancy and labor.

At the second lecture, also given by a physician when the women are four to six weeks before term, labor is discussed. The action of voluntary and involuntary muscles is explained, as are the stages of labor and the signs of beginning labor. The members of the group are told when to come to the hospital, the method of admission and the examination procedures which will follow on entrance to the ward. The patient's reaction to normal labor is discussed as well as the importance of the relaxation technics and the availability of anesthetic aids. An important purpose of the second lecture is to prepare the patient in advance so that she may know what to expect physically and emotionally, what her attendants expect her to do and how they may be expected to aid her.

The exercise classes are conducted by a nurse who is familiar with the lecture material and knows the simple exercise technics outlined in Mrs. Heardman's book. While the exercises are being taught and rehearsed, the lecture material is again presented and questions are answered. A feature of the exercises is their simplicity, and this is important because the patient can fit them into her daily routine.

The exercises fall into two groups: (1) those that are aimed at increasing the tone and efficiency of the back, abdominal and perineal muscles and (2) those that promote physical relaxation, the latter finding their greatest application during labor.

In recapitulating our experience we feel justified in making these statements:

(1) An educational program incorporating physical training for prospective mothers has important advantages during pregnancy and labor.

(2) Not only does a better understanding by the patient of the physiologic process of pregnancy and labor, which may be gained by instruction from physicians and nurses, reduce anxiety by increasing the confidence of the patient, but the use of physical therapy technics definitely aids in the muscular effort of labor.

(3) We do not consider that the program which we have established is fundamentally new; we view it rather as an attempt to emphasize and bring into practical use certain aspects of present day knowledge of the psychology and physiology of pregnancy and childbirth.

(4) Objections have been raised against such a program, to the effect that it is impractical because of the time that physicians and nurses must devote to it. We do not consider this criticism valid, because the use of the class method of instruction actually takes but little increased time. As far as attention in labor is concerned, it is our opinion that patients in active labor should not be left alone with any regimen.

(5) We recognize that fear and anxiety play a large part in the creation of tension, which has undesirable effects, but we do not place undue emphasis on this aspect. We prefer to think of our program in a broad sense as being directed toward childbirth with understanding and support rather than toward childbirth without fear.

Psychogenic Rheumatism

William Tegner, M.R.C.P., Desmond O'Neill, M.D., M.R.C.P., D.P.M., and Anna Kaldegg, Ph.D., B.A. In BRITISH MEDICAL JOURNAL, No. 4620, p. 201, July 23, 1949.

The principal diagnostic features of psychogenic rheumatism appear to be in (1) expression of complaint; (2) area of discomfort; (3) failure to conform to an established organic syndrome; (4) setting of the illness in relation to the patient's life situation, and (5) lack of response to physical treatments.

The treatment and disposal of patients regarded as suffering from psychogenic rheumatism has always provided a real problem to the clinician. It is part of the syndrome that they do not respond to treatment which is limited to physical measures. It seems clear that to these patients their suffering is something very personal and valuable; it makes them important, interesting, and worthy of sympathy, and is a protection against an unkind world. To treat them with passive physical therapy is to acquiesce in their own diagnosis of disease and to allow it to take a deeper root. Such treatment usually gives temporary relief but does not cure; after a time it may come to be indispensable to the patient. Physical therapy which is painful may remove the symptom; another symptom will then takes its place. Injections of a local analgesic may be tried; they generally have a dramatic effect. Even as little as a few drops of 1 per cent procaine may lead to fainting and hysterical manifestations.

One of us has attempted to treat the patients in groups by general ultraviolet irradiation followed by exercises; this method has had some success. Group psychotherapy of selected patients has now been started and has already given encouraging results. It is probable that an approach along these lines will prove to be the most profitable measure.

An investigation by a physician, a psychiatrist, and a psychologist of a group of patients suffering from a rheumatic disorder without signs of organic disease is described; a comparison with a control group is made.

In the former group the disorder was found to have certain special characters; in most cases the onset and course of the condition could be correlated with emotional disturbance. The condition seems to merit recognition as a clinical entity: it may be described by the term "psychogenic rheumatism."

The Painful Foot Following Injury

Emil D. W. Hauser, M.D., Chicago. In INDUSTRIAL MEDICINE AND SURGERY, 18:8:326, August 1949.

The foot is the organ of locomotion and its function consists of weight-bearing and propulsion. Pain interferes with this function and causes disability. Injuries to the foot that cause anatomical changes receive the careful attention of the surgeon.

A weak foot results unless correct normal position is obtained with a corrective shoe and correct gait is instigated before the patient is dismissed.

Dynamic Therapeutics in Chronic Disease

Howard A. Rusk, M.D. Guest Editorial in VIRGINIA MEDICAL MONTHLY, 76:6:271, June 1949.

Today, as medical science moves forward in the prevention and cure of infectious diseases, chronic illness has become the nation's primary medical problem.

One of the principal causes of the increasing prevalence of chronic disease has been the great advances in medical and surgical care which have prevented death and produced an aging population. Two thousand years ago, the average length of life was 25 years; at the turn of the century, it was 49; today, it is 66. In 1900, 1 person in 25 was 65 years of age or older; it is estimated that in 1980, the ratio will be 1 in 10. The chances are now two out of three that a young man now starting his working life at the age of 18 will live to his retirement age of 65.

As people become older, their medical needs change, and they demand more medical service. In 1940, the 26.5 per cent of the nation's population over 45 required over half the nation's medical services. By 1980, it is expected that the number of persons over 45 will constitute nearly half of the population.

With the introduction of rehabilitation programs in general hospitals, increased facilities for convalescent care and home care programs of medical, social, visiting nurse and visiting housekeeper services, many of the aged and chronically ill will not need to seek admittance to public homes. Many present residents could be restored either to employment or self-care with the introduction of dynamic rehabilitation programs.

If the aged and chronically ill are to have the comfort, security, dignity and companionship that should be the heritage of every older person, public homes must provide them with cheerful, attractive surroundings, as much privacy as possible, a place for their belongings, opportunities for recreation and social activity and a chance to do something productive.

With the growing incidence of disability due to chronic disease, medicine must assume a great deal of the leadership in the responsibility of society which Dr. Edward L. Bortz so aptly summarized when he said, "The society which fosters research to save human life cannot escape the responsibility for the life thus extended. It is for science not only to add years to life, but, more important, to add life to the years."

Fibro-Fatty Tissue and Its Relation to Certain "Rheumatic" Syndromes

W. S. C. Copeman, M.A., M.D., F.R.C.P. In BRITISH MEDICAL JOURNAL, No. 4620, p. 191, July 23, 1949.

It is thought that an etiological classification, although desirable in the case of a "disease entity," must remain impracticable in the case of a syndrome. The classical conception of fibrositis is briefly reviewed, and a classification based upon the structure of the nodules found at the source of the pain is tentatively proposed.

Evidence is produced that the fat tissues of the body are subject to pathological variations which cause pain. This pain is generally labelled as "rheumatic" or "fibrositic." When this occurs in the neighborhood of joints the condition often is wrongly termed arthritic.

It has been shown that several recognizable "rheumatic" syndromes can be the result of an abnormal retention of fluid by fat lobules in certain situations. When this occurs they endeavor to swell, but, being confined by indistensible fibrous tissue, they are unable to do so, and tension pain results. This edema shows no sign of being inflammatory in nature.

In some such cases a flaw occurs in the fibrous covering, resulting in herniation of the enclosed fat lobule into an adjoining layer. Such herniations may be of three types, which are described.

The origin of this selective swelling probably is endocrine. The direct effect of cold may unmask it.

The syndromes described as being due to this abnormality of fat are: (a) "Fibrositis," which occurs in any of the several normally occurring fat-pads which are described, and (b) panniculitis, which occurs in abnormally deposited fat, mostly in predictable sites. Panniculitis may occur with or without general obesity. In either case the chief sites of pain tend to remain similar. Adiposis dolorosa (Dercum's disease) would appear to be only a quantitative variation of this combination.

Treatment must be directed concurrently along several lines if success is to be achieved. Those discussed include diet, endocrines, diuresis and dehydration, local injections, physical therapy, and surgery.

The indications for surgery are limited but tend to afford dramatic relief. These are the removal of irreducible fat hernias, and to a smaller extent removal of localized areas of painful tissue in severe cases of panniculitis.

Pathologic Changes in the Central Nervous System Resulting from Experimentally Produced Hyperpyrexia

Norman B. Dobin, M.D., Clarence A. Neymann, M.D., and Stafford L. Osborne, Ph.D. In JOURNAL OF NEUROPATHOLOGY AND EXPERIMENTAL NEUROLOGY, 8:3:295, July 1949.

Many instances have been reported in the literature of subjects who recovered from very high body temperature. Heat stroke occurs in man at a temperature of 108.5 F. However, occasional patients have been reported to recover from body temperatures above this level. Temperatures up to 110 F. have been produced accidentally in the course of artificial fever therapy. When the patient was cooled promptly, he survived this heat stroke.

This investigation was undertaken to study the pathologic manifestions in the central nervous system in dogs whose rectally recorded temperature was artificially elevated to 110 F. and maintained for at least one hour above 107 F. It differs from previous experimental work in three respects: (1) An attempt was made to reach a temperature of 110 F.; to maintain a temperature above 107 F. for at least one hour; to provide intravenous saline to replenish fluid and salt lost during the experiment and oxygen to combat anoxemia. (2) The studies include observations not only on acute animals but also on such that lived for five to six months following the experiment. (3) An attempt was made to cool the head and its contents by application of a collar about the neck frozen with carbon dioxide.

The brains of animals dying shortly after subjection to hyperthermia demonstrated hyperemia, edema, and an acute disease process of the parenchyma without signs of beginning repair.

The brains of the animals living for several months after subjection to hyperthermia demonstrated evidence of parenchematous damage undergoing repair. Clinically this group of animals showed no disturbance in motor function or behavior. They appeared and behaved like normal animals.

The application of a frozen carbon dioxide temperature collar about the neck, in the manner described, did not lower the temperature of the head or prevent heat stroke.

Extradural Hematoma in Infancy and Childhood

Franc D. Ingraham, M.D., James B. Campbell, M.D., and Jonathan Cohen, M.D., Boston. In JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 140:12:1010, July 23, 1949.

Extradural hematoma proved by operation occurred twenty times in a series of a little over 1,000 pediatric patients treated for head injury. The differential diagnosis is discussed. The signs manifested by the patients in the series are listed and considered in regard to the mechanics of the skull. The indications for trephination are given. This is the only certain method of diagnosis and of adequate treatment. The operative procedure is outlined. There were 2 deaths in a series of 20 infants and children.

Paralytic Poliomyelitis: The Early Symptoms and the Effect of Physical Activity on the Course of the Disease

W. Ritchie Russell, M.D., F.R.C.P. In BRITISH MEDICAL JOURNAL, No. 4602, p. 465, March 19, 1949.

This paper is based on the careful questioning of 100 patients (59 males and 41 females) who were convalescent from poliomyelitis, and who were old enough to give a good account of their early symptoms. The number of pure bulbar cases is small, as these patients were often either unfit to be questioned, or, having been discharged home after a short period of convalescence, no longer available.

In 100 cases of poliomyelitis the early symptoms have been studied in detail.

The prodromal stage, when present, consists usually of a brief nonspecific illness, but neurological symptoms occasionally appear even at this early stage.

The preparalytic stage is the most critical period of the disease. Spinal symptoms in "typical" cases begin abruptly, and occurred in 95 of the 100 cases. They are of great value in diagnosis, but are very variable as regards both type and severity.

Two or more phases of the preparalytic stage may appear, and paralysis may spread in two or more stages. The spinal symptoms may subside before paralysis develops.

In "atypical" cases the onset of the preparalytic stage is vague, and the symptoms of a prodromal stage may appear to merge into the preparalytic stage.

An unusual amount of physical activity immediately preceded the preparalytic stage.

Complete physical rest in bed from the onset of the preparalytic stage greatly reduces the danger of severe paralysis. Severe physical activity at this stage is almost suicidal, while the continuance of even average physical activity is dangerous.

The possible effect of trauma in localizing the disease is considered.

During an epidemic physical activity should be avoided entirely in minor illnesses. The highly dangerous belief that malaise and other vague symptoms should be "worked off" by exercise requires correction.

What Can the General Practitioner Do for the Nervous Patient?

W. C. Alvarez, M.D. In IOWA STATE MEDICAL SOCIETY JOURNAL, 39:1-42, January 1949.

Alvarez shows that although the family physician frequently is helped in making a diagnosis by knowing the patient and his background, the average physician does not think often enough of a neurosis. Physicians sometimes fail to recognize a neurosis among their own relatives. The author deplores that professors in medical schools are much too inclined to neglect the neuroses and to demonstrate in the amphitheater examples of only the most rare and bizarre organic diseases. The teacher should remember that his students will rarely, if ever, see or recognize one of these diseases. What they will see every day will be nervous men and women with negative reactions to tests and all sorts of distress everywhere: backaches, headaches, dysmenorrhea, flatulence, fatigue and lack of energy. One of the bad features of medical practice today is that physicians so often try to diagnose neurosis only by exclusion. A patient is put through all the tests, and if negative reports are obtained, a neurosis is diagnosed. The disadvantage of this procedure is that in tests slight abnormalities may be disclosed which have nothing to do with the illness, but which satisfy the examiner and lead him to conclude that the diagnosis is made; the real disturbance, however, goes on unrecognized and unrelieved. The author warns against trying to make a diagnosis from one test and against placebos of diagnosis such as low blood sugar, low blood calcium, floating kidney and the like. The way the history is told frequently differentiates the patient with organic lesions from the nervous patients in whom the disorder is functional. The author cites syndromes that are always functional in nature, giving particular attention tto migrainous disorders, and to gastrointestinal distress not related to meals or defecation.

Management of Postoperative Pulmonary Complications

In THE MANITOBA MEDICAL REVIEW, 29:5:273, May 1949.

Of all the complications that beset the surgeon, those involving the lungs are among the most common. These complications, marking the difference between success and failure of an operation have led to more intelligent efforts in their reduction by better preoperative preparation, improvement in anesthetics and their administration, meticulous care in the elimination of operative trauma and close attention to the patient throughout the convalescent period.

The sensible approach to pulmonary embolism is prevention of phlebothrombosis. This may be accomplished through (1) early rising, (2) by exercise, (3) Trendelenburg position to accelerate venous return from the extremities (4) anticoagulants, (5) prevention and correction of dehydration and circulatory collapse and (6) deep breathing to increase negative thoracic pressure and hence favor the movement of venous blood.

The Diagnostic Difficulties of Non-Paralytic Poliomyelitis

Henry Simon, M.D., Ellis L. Smith, M.D., and Horace O. Bell, M.D. In THE JOURNAL OF THE MEDICAL SOCIETY OF NEW JERSEY, 46:5:225, May 1949.

Controversy as to the diagnosis now exists more in the field of abortive and nonparalytic poliomyelitis than with other types of poliomyelitis. Statistics on nonparalytic poliomyelitis should be viewed with suspicion by all health officers. A case will be diagnosed as nonparalytic poliomyelitis in the summer and the same case diagnosed as an upper respiratory infection, or choriomeningitis in the winter. During epidemics, the general practitioner is likely to call too many cases nonparalytic poliomyelitis and to report them to the health department with the inevitable error in our morbidity and case fatality rates. On the other hand, in endemic periods, cases of nonparalytic poliomyelitis are likely to be missed and not reported. The accurate diagnosis of nonparalytic poliomyelitis awaits the perfection of a serologic test, available in the acute stage of the disease.

Intra-Articular Temperature as a Measure of Joint Reaction

Steven M. Hovarth and Joseph L. Hollander. In THE JOURNAL OF CLINICAL INVESTIGATION, 28:3:469, May 1949.

Clinicians studying rheumatic diseases have long used the surface temperature over the joints as indicative of the degree of synovial reaction. Many of the terms used in rheumatology imply temperature changes in the joint tissues, viz. "the acute hot joint of gout," "the cold swelling of chronic rheumatoid arthritis," the so-called "friction effect" or "heating-up" of osteoarthritic joints following exercise, or "articular jelling" (implying excessive joint cooling and stiffening on prolonged rest). Many measurements have been made of the skin temperature over diseased joints, but no study on intra-articular temperatures in human joints has been reported. Several studies have been made of intra-articular temperatures in dogs and one study was performed on the stifle joint of a horse to determine the coefficient of friction within the joint, with and without synovial fluid.

(1) A method for determination of the temperature of the articular cavity has been developed which appears to have a practical use both to measure the degree of inflammation in the joint and to determine the effect of external influences on joints.

(2) Intra-articular temperatures correlated somewhat more closely than the surface temperatures over the joint with the clinical activity of rheumatoid arthritis.

(3) The joint temperatures in degenerative joint disease were higher than anticipated from relative clinical activity. This might be related to greater joint friction effects and to retarded cooling.

(4) The joint temperature fell when hot packs were applied over the joint, and rose with the application of cold packs. The magnitude of these responses was affected by seasonal influences being greater in the winter than in the summer.

The Effect of Exercise and Body Position on the Venous Pressure at the Ankle in Patients Having Venous Valvular Defects

Albert A. Pollack, Bowen E. Taylor, Thomas T. Myers, and Earl H. Wood. In THE JOURNAL OF CLINICAL INVESTIGATION, 28:3:559, May 1949.

The purpose of this investigation was to determine directly and record continuously the effects of body position and of walking on the venous pressure at the ankle in patients having incompetent veins of the lower extremity.

Venous pressure in the greater saphenous vein at the ankle was studied in 13 patients with varicose veins while resting in the recumbent, seated and standing positions and while walking on a treadmill.

Confirmatory data were obtained, indicating that the venous pressure at the ankle in the resting, sitting or standing positions in normal subjects and patients with incompetency of the saphenous veins is sufficient to support a column of blood to approximately the level of the third thoracic interspace.

Walking on a level treadmill at 1.7 miles per hour produced an average decrease in mean venous pressure at the ankle of 37 (30 to 47) mm. of mercury in seven patients with primary varicose veins and 11 (5 to 13) mm. of mercury in six patients with varicose veins associated with a history of a previous iliofemoral thrombophlebitis. In normal subjects this value was 64 (54 to 71) mm. of mercury.

In patients who had uncomplicated incompetency of the greater saphenous vein the average time required for the venous pressure to return to the resting standing level after cessation of walking was 2.8 (1.2 to 5.5) seconds. In those patients with a history of previous iliofemoral thrombophlebitis the pressure rose to levels slightly in excess of the control resting value within one second after completion of the walk as contrasted to the 31 (8 to 57) seconds required for the pressure to return to the control values after walking in normal subjects.

These data are in harmony with the concept that the function of the venous values in conjunction with the action of voluntary muscles is of primary importance in the regulation of venous pressure at the ankle.

Posture

J. T. Aitken, M.B., Ch.B. In THE BRITISH JOURNAL OF PHYSICAL MEDICINE, 12:4:92, July-August 1949.

Posture is the attitude or carriage of the body. Observation of people standing in queues or on stations shows that the human body is carried in a great variety of ways, and that in any individual there is a constant change. Within a few minutes, the weight is carried down one leg, then the other or down both legs. The way in which the nonweight-bearing leg is used for balancing purposes also varies, as do the positions of the hands and arms. At one moment the body is held erect and on the alert, and the next moment it is allowed to relax and slouch.

In view of all this change, it is desirable to recognize certain well-known attitudes of the body. When the person is "standing at attention" he has his heels together, the weight is evenly distributed down both legs and the arms are placed at the sides of the trunk. Usually the body leans forward slightly and almost all the muscles are taut. Much energy is used in this attitude, which is rarely found outside military life. The "stand-at-ease" position allows of some relaxation of the muscles from the "attention" position; the heels are separated and the forward leaning of the body is reduced. The weight is again transmitted down both legs, and this is the usual attitude of a person on the alert in civilian life. In the "stand-easy" position, the weight usually is carried by one leg, the other being used to help to balance the body, and little energy is expended, for most muscles are relaxed and at rest.

Management of Cerebral Palsy

Frederic B. House, M.D. In THE JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY, 48:7:843, July 1949.

The problem of managing cerebral palsy is one of the most interesting phases of physical medicine. It is also an important aspect of the work in physical medicine.

In the spastic child, treatment is directed toward individual muscles. If the muscle is spastic and shortened, it must be stretched, and this is accomplished by slow stretching, not rapid enough to elicit the stretch reflex. A trained physical therapist may find light percussion over the muscle may help in relaxing the spasm and facilitating stretching. The weak muscle must be treated with resistive exercises and massage in order to increase its tone and strength. Because of the spastic's inherent loss of many of the instinctive movement patterns that normal people are born with, exercise of the parts as a whole may be important in establishing basic action patterns. These exercises at the same time loosen stiff joints and stretch shortened muscles. My custom has been to place much of the problem of actual treatment on the shoulders of the physical therapist, and I am sure that the good results were chiefly due to her technic, aided by detailed prescription based on accurate diagnosis.

Backache and the Orthopedic Surgeon

A. M. Rechtman, M.D., Philadelphia. In INDUSTRIAL MEDICINE, 18:5:203, May 1949.

Backache is a symptom, not a disease nor a diagnosis. It is so common that few people reach adult life without having had back annoyance at some time. The causes are legion; certain characteristic complaints, however, may give a clue to the possible etiological factor. Various phases of backache, as seen in the practice of the orthopedic surgeon, are discussed.

Backache, regardless of the cause, frequently becomes evident when the strain, often muscular and ligamentous, is disproportionately greater than the strength or the ability of the part to compensate.

An attempt has been made to discuss the symptom of backache in a practical manner. Most patients respond favorably to palliative treatment, regardless of the duration of symptoms, providing irreparable damage has not occurred. With careful analysis and palliative treatment, backache may often be prevented or corrected. A single episode of backache may occur. If the posture is poor, recurrence is more likely, but the severity and frequency of the episode may be lessened by intelligent and intensive treatment. Surgery is necessary in a relatively small percentage of cases.

Some surgical indications were mentioned, but surgical procedures were not discussed in this presentation. Despite the so-called advances presented in the literature, there are still some patients who respond very slowly and poorly to the best that medicine has to offer. This indicates that there is still much to be learned regarding the etiology and treatment of backache.

The Chronic Sick Under New Management: Experiences in Starting a Geriatric Unit

A. N. Exton-Smith, M.A., M.B., and G. S. Crockett, M.A., M.B. In THE LANCET, No. 6563, p. 1016, June 11, 1949.

This paper describes observations at a hospital for the chronic sick during the first few months after it was taken over by a London teaching hospital. A geriatric unit has been formed, under the care of a consultant, with facilities for investigation, treatment, and research; and this is, we understand, the first unit of its kind in this country to be established as part of a teaching hospital.

Physical therapy.—Physical therapy is needed at every stage of rehabilitation. Exercises, carefully explained and performed, either individually or in a class, are paramount, and there seems little place for the more time-consuming and expensive methods of physical treatment, such as short-wave diathermy, ultraviolet light, and faradism.

Occupational therapy.—A carefully chosen program of occupation can renew interest in life, allay mental deterioration, disguise progressive failure of mental and physical powers to the patient, and help to treat specific conditions in which there is muscle incoordination or risk of losing mobility of joints. This applies particularly to those who must obviously remain bedridden for the rest of their days.

Patients often are hesitant in starting this form of treatment, and occupations showing quick results for little labor are most suitable at first. To maintain interest, the patient must not only feel a sense of achievement in being able to make things, but must know that what he makes is being put to some use.

While rehabilitation was proceeding, the patient's social history was investigated by the almoner, with a view to reestablishing lost contacts with relatives and examining the possibility of a return to his home, if and when he becomes fit enough. It was encouraging to find that some 30 per cent of bedridden patients had become ambulant after a few months. With the improvement in the patients' physical state, their apathetic attitude and the atmosphere of apprehension began to disappear. It is interesting, however, that their reactions to efforts to make them more mobile were mixed (this is also reported by Thomson 1949); some were delighted at becoming more independent, but others were diffident.

The Value of Physical Therapy in the Small Hospital

Alma M. Troxell. In THE MODERN HOSPITAL, 72:6:72, June 1949.

The appointment of a physical therapist is of major importance if the department is to be successful. Individual reaction to this type of treatment may be variable, so that experience, judgment and high sense of responsibility are essential qualities in the physical therapist in order that she may inspire the confidence of the patient. Moreover, a professional attitude and a well developed personality are as necessary for the physical therapist as they are for the physician or the nurse.

What is the value of a physical therapy department in a small hospital?

Experience has shown that the length of stay in the hospital can be shortened and suffering can be substantially relieved by these methods of treatment, thereby improving patient morale.

The therapeutic value of the department has been established in our hospital to the extent that its services are being used by every department, with a yearly increase in the number of outpatient treatments. At present 50 per cent of the patients are outpatients.

In our community the public is being educated to come to the physical therapy department of the hospital; consequently, this keeps the patient under the care of the medical profession and provides adequate follow-up of each case.

From our experience I am convinced that physical medicine is not only a valuable but also a necessary adjunct to the modern hospital, whether it is large or small.

Suture of Peripheral Nerves: Factors Affecting Prognosis

John W. Kirklin, M.D., Francis Murphey, M.D., and Joseph Berkson, M.R. In SURGERY, GYNECOLOGY AND OBSTETRICS, 88:6:719, June 1949.

All who have cared for patients in whose case a peripheral nerve has required suture know that complete recovery of function of the involved nerve does not always occur. Yet it also is known that under the proper circumstances an extremely gratifying recovery can ensue.

These data lend factual confirmation to the results of many previous studies, and also the impressions of many who have managed peripheral nerve injuries. Complete recovery of function, to a degree comparable to the normal state, is indeed rare after nerve suture. Eminently satisfactory recoveries, however, can be obtained in many instances.

The patient's interests are best served by accurate end-to-end anastomosis of the nerve within three months after iniury and preferably in the first month after injury. High-lying injuries, such as those of the brachial plexus, should be an especial stimulus to early repair. However, repair is of value, though limited, when done as long as 15 months after injury. Beyond this point, motor recovery will rarely result but some return of crude sensory funtion may occur.

Multiple Sclerosis

Tracy J. Putnam, M.D., Chief and Attending Neurosurgeon, Cedars of Lebanon Hospital, Los Angeles. In THE CRIPPLED CHILD, 27:1:7, June 1949.

Irrespective of the cause of multiple sclerosis, many victims of it can be made more comfortable by attention to their symptoms. Of these, the ones which most commonly require treatment are spastic weakness, staggering and tremor of the hands. Until a decade or two ago, prolonged rest in bed usually was prescribed for patients suffering from multiple sclerosis and this treatment is still widely employed It has been my experience over many years that confinement to bed, except in the most acute phases of the disease, tends to produce invalidism and incapacity, and to prolong the disability. Vigorous physical therapy, on the other hand, often greatly improves the patient's strength, functional ability and well-being. This point of view has recently been supported by Kabat and others.

The type and technic of physical therapy to be used in each case depends on the precise symptoms and the experience and ingenuity of the physical therapist. In general, it should be remembered that the weakness is spastic in origin; that is, that the muscles are out of control rather than partially disconnected from the nervous system, as in poliomyelitis, and that certain groups of muscles have become relatively more powerful than their opponents, because of the overactive reflexes. To restore the balance of muscular power, it is important first to determine which groups of muscles are weakest and to devise special exercises to develop them, while relaxing the groups which tend to go into spasm. The exercise should be vigorous and exerted against the greatest resistance that the muscles can overcome. When one group of muscles is fatigued, the process should be repeated with another, and so on in rotation, until it is clear that the patient can do no more.

Sometimes movements which seem beyond the reach of volition can be produced by having the patient will to make the movement, then eliciting a reflex which brings it about. After persistent practice in this manner, the movement may be made voluntarily.

The application of heat and the use of relaxing drugs such as curare and Tolserol often aids in overcoming spasm. If movement of joints is limited, their range of motion often can be increased by manipulation. Electrical stimulation of weakened muscles is of questionable value, but may be worth trying.

Tremor and staggering often may be overcome, at least partially, by exercises in coordination. The patient who is unsteady on his feet is taught to place them accurately in footsteps stencilled on the floor, and so gradually reacquires his balance and rhythm of walking. The patient whose arms are ataxic practices touching one spot after another until his aim improves.

Rehabilitation in Poliomyelitis

Kristian G. Hansson, M.D. In NEW YORK STATE JOURNAL OF MEDICINE, 49:8:923, April 15, 1949.

During the last eight years we have had much discussion on the early treatment of poliomyelitis, the percentage of recovery, and the mode of early treatment. In studying the various reports the end results were very much the same with the different treatments, i.e., 70 per cent recovered completely, 18 per cent showed slight residual paralysis, and 12 per cent severe paralysis. It is this last group of patients with marked handicaps where rehabilitation plays an important part.

The rehabilitation in polio really starts in the acute stage in the form of prevention of deformity.

Bed rest versus activity and nutritional requirement must be determined for each individual patient.

Physical restoration to strengthen and coordinate muscles, to support joints by braces or orthopedic operations, and to retrain the patient in a new functional activity has received additional emphasis since the war.

Mental readjustment should not be neglected in a disease that can strike the healthiest individual and make a wheelchair patient out of him in a very short time.

Vocational training is the responsibility of the community, the State, and the Federal government and is also recommended to make the handicapped patient independent and a useful citizen.

It is our duty to rehabilitate the polio patient after the acute illness. We have not enough hospitals equipped for this work. We need special hospitals for convalescent polio patients, especially for adolescent and adult patients. The polio patients in New York are well cared for, thanks to the support of the National Foundation for Infantile Paralysis. It is only to be hoped that New York will soon have adequate convalescent hospitals for all polio patients, including adults.

Nonparalytic Poliomyelitis and Mumps Meningoencephalitis: Differential Diagnosis

Lawrence Kilham, M.D., Jeanette Levens, M.P.H., and John F. Enders, Ph.D., Boston. In JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 140:11:934, July 16, 1949.

The unequivocal diagnosis of nonparalytic poliomyelitis is difficult to achieve, since its signs and symptoms often are those associated with aseptic meningoencephalitis, and for this syndrome there may be a variety of causative agents. The most direct evidence of nonparalytic poliomyelitis which can be obtained at present consists in the isolation of the virus from the stools or pharyngeal secretions in suspected cases. But the isolation of the agent from such sources cannot be regarded as entirely conclusive, and the procedures involved are intricate, time consuming and expensive. They cannot, therefore, be used as routine. The diagnosis, accordingly, often is made on epidemiologic data taken together with the clinical observations. Epidemiologic evidence, however, is intrinsically circumstantial and hence can be considered only as presumptive in character.

As yet no laboratory method for the routine diagnosis of nonparalytic poliomyelitis is available. Since mumps meningoencephalitis without parotitis is by no means rare, it would seem that whenever possible the diagnosis of nonparalytic poliomyelitis should be withheld until laboratory tests for mumps meningoencephalitis have been carried out.

From the epidemiologic point of view, a diagnosis of nonparalytic poliomyelitis may be suggested if other members of the family or group concurrently have the paralytic form. Without a definite history of this sort, however, the mere occurrence of aseptic lymphocytic meningoencephalitis during the late summer and early fall, when poliomyelitis may be epidemic, is insufficient to warrant even a tentative diagnosis of the nonparalytic form of the disease.

Among 17 hospitalized patients given the diagnosis of nonparalytic poliomyelitis, 6 appeared to have mumps meningoencephalitis, as indicated by the results of serologic tests. The virus was recovered from the spinal fluid of 3 of these patients. The unequivocal diagnosis of nonparalytic poliomyelitis is at present difficult or impossible to make on the basis of clinical, laboratory and epidemiologic observations.

Treatment of Cerebral Palsy: Clinical Study in Use of d-Tubocurarine in Peanut Oil and Myricin

Carl L. Holm, M.D., Edmund V. Olsen, M.D., and Robert S. Dow, M.D. In NORTHWEST MEDICINE, 48:5:320, May 1949.

Cerebral palsies of childhood are disorders so difficult to treat that any drug, which promises to facilitate well-tried orthopedic and physical therapy measures, is worthy of serious consideration, even though a curative result is not expected.

In the treatment of spastic disorders with curare it is theorized that, by using small doses, a partial block can be maintained at the myoneural junction, thereby reducing the abnormal stimuli produced by the upper motor lesion and the stretch reflex. On the other hand, voluntary impulses of sufficient magnitude will be able to traverse the block, allowing motion that was previously masked by spasticity. It is questionable whether or not this is the complete picture, as recent animal experiments have shown that curare also acts on the central nervous system. Centrally, the synapse is considered to be the site of action. The action of d-tubocurarine is now thought by some to be widespread, embracing all cholinergic terminals throughout the body, preventing response to acetylcholine.

d-Tubocurarine in peanut oil and myricin is no substitute but rather an adjunct to the present therapeutic procedures of education, physical therapy, and surgery in cerebral palsy. Early recognition, classification and treatment are of prime importance.

Book Reviews

Your Child or Mine: The Story of the Cerebral-Palsied Child. *By Mary Louise Hart Burton. In collaboration with Sage Holter Jennings. Cloth. Price, $1.25. Pp. 64, with 11 illustrations. Coward-McCann, Inc., 2 West 45th Street, New York 19, 1949.*

This booklet was written in the hope that it would answer the questions asked by people when first seeing or hearing about children with cerebral palsy. The true story of six children with cerebral palsy is told in simple language. Because specific children have been described, specific causes of their handicaps have been given. The coordinated treatment for these children by medicine, surgery, physical therapy, occupational therapy, speech therapy and bracing is described. This book is helpful in bringing the problem of the cerebral palsied child to the attention of the public. A list of Cerebral Palsy Associations and Clinics and a list of books, magazines and pamphlets suitable for reading by the laity is included.

Physical Methods of Treatment in Psychiatry. *By William Sargant and Eliot Slater. Cloth. Price, $3.50. Pp. 215. The Williams and Wilkins Company, Mt. Royal and Guilford Avenues, Baltimore 2, Md., 1948.*

This is the second edition of a book which made its first appearance in 1944. The high standard previously set has been maintained thoroughly. It has been revised in the light of more intensive experience with the various methods of physical treatments for mentally disturbed patients. The general form of this edition is the same as before. There are chapters devoted to each of the special methods of treatment, for example, insulin treatment of schizophrenia, modified insulin therapy, convulsion therapy and so on. Each chapter contains detailed information regarding the indications, contraindications and specific instructions for any therapy. One of the best changes in this edition is the appearance of a chapter on the treatment of the epilepsies by Denis Hill. It is a brief but lucid discussion of the over-all field of convulsive disorders rather than a didactic lecture on which drug to use at which time. The bibliography is a welcome addition to the book.

As before, this book is highly recommended to all psychiatrists and even general practitioners who wish to be informed about the "mysteries" of newer methods of treatment in psychiatry. It helps bring psychiatry closer to medicine as is the expressed wish of the authors in their preface. There is no intent to depreciate the value of psychotherapy but rather to point out the time and place for other methods of treatment.

Functional Neuro-Anatomy. *By A. R. Buchanan, M.D., Professor of Anatomy, University of Colorado School of Medicine, Denver, Colorado. Cloth. Price, $6.50. Pp. 242, with 199 illustrations. Lea & Febiger, Washington Square, Philadelphia 6, Pa., 1948.*

The author has made a good attempt to present the complexities of neuroanatomy in an interesting and usable manner. The book achieves its present form as the result of revisions of a syllabus used for teaching medical students. Thus it carries with it the added value of practical experience. The main thesis is that the old method of teaching the contents of each level of the nervous system as an isolated unit, which units are then integrated at the end of the course, is confusing, didactic and boring. Instead of this, the author discusses in isolated chapters pathways and functions from their origin to their termination, following their course through sections at various levels of the nervous system. There is no doubt that this method has its advantages, and many of these are clearly evident in the book.

In order to make the presentation more absorbable there is a smattering of clinical neurology to show the functional importance of the anatomic structures being studied. However, in his zeal the author has introduced some irregularities and inconsistencies which should create confusion in the mind of a student covering neuroanatomy for the first time. For example, the first mention of the dentate ligament is brought up not in a discussion of the coverings of the spinal cord but rather as a landmark in the surgical procedure of cordotomy. Another example is the sudden mention of the nodose ganglion early in the book without orientation except to say it is the source of cells for the general visceral afferent fibers of the vagus nerve. There are numerous other items of the same nature. However, once these defects are discounted there is much good to be said for the book.

It is clearly written in simple language. The diagrams are excellent and most of them are original. The sections on the autonomic nervous system and the visceral reflex arcs are valuable presentations. The book is small enough to be used for rapid review in preparation for clinical training. As such it is highly recommended. However, one must not confuse this with a reference book in neuroanatomy because of the purposeful omission of details which are unnecessary to the student at that particular stage of his training. The book should prove to be more useful even for a review course in neuroanatomy once some foundation has been established.

The Kinesiology of Corrective Exercise. *By Gertrude Hawley, M.A., formerly Head of Corrective Gymnastics at Stanford and Northwestern Universities. Second edition. Cloth. Price, $3.75. Pp. 192, with 107 illustrations. Lea and Febiger, Washington Square, Philadelphia 6, 1948.*

It is being increasingly recognized by observant teachers and physicians that participation in games and athletics does not necessarily insure the control and management of the body most conducive to health and efficiency. Nor does it provide opportunity for special training needed to ameliorate the effects of faulty growth and definite malfunctioning. The author has written this book in an effort to fulfill this need.

The chapters comprising Part I present facts and theories regarding the structures and functions of certain of the articulations which have particular significance from a corrective standpoint with a brief consideration of the orthopedic conditions most commonly encountered.

Part II and the Appendix present in considerable detail analyses of typical corrective exercises, preceded by short chapters on the physiology of exercise, posture standards and practical suggestions on the conduct of corrective classes in schools.

This book is recommended to physical therapists as a practical application of kinesiology.

Psychobiology and Psychiatry: A Textbook of Normal and Abnormal Human Behavior. *By Wendell Muncie, M.D., Practicing Psychiatrist; Chairman, Medical Advisory Board, Seton Institute, Baltimore; Associate Professor of Psychiatry, Johns Hopkins University; Consultant in Psychiatry, U. S. Veterans Administration. Second edition. Cloth. Price, $10. Pp. 620, with 70 illustrations. The C. V. Mosby Company, 3207 Washington Boulevard, St. Louis 3, Mo., 1948.*

This is the second edition of a previously well-accepted textbook of psychiatry. It presents the school of thought promulgated by Adolph Meyer and amplified by the personal clinical experience of the author. The only major change from the first edition is the omission of the section on the history of psychiatry. Although the author has valid reasons for this change, it seems to be an unfortunate decision, at least to this reviewer, for it is recalled that the historical appendix in the first edition was readily available and highly informative to the student.

The first part of the book is devoted to the student's personality study. The various aspects of personality development, physiological components of emotional change, social stresses, etc., are discussed with the idea of enabling the student to gain some personal insight into himself. In these chapters the fundamental principles of psychobiology are presented to show that man behaves as a physiological and psychological unit in his environment. The second part of the book is the more formalized discussion of abnormal behavior. The various psychiatric entities are presented with the particular nomenclature preferred by the psychobiologists. There are numerous case histories to elucidate the material. The third part of the book is devoted to treatment and again it covers the field amply from the point of view of the author.

One cannot find fault with the material presented in this book. However, it leaves one with the feeling that everything is dealt with rather superficially. This is particularly true in reference to treatment where the main theme seems to be a common-sense discussion of the problems the patient presents at the moment. There appears to be little stress upon the development of adequate resources in the personality to deal with his own problems. The author does make a logical plea for tolerance of each school of psychiatric thought for the other and leaves the way open for further fusing of ideas in times to come. The language used in the book is not the easiest to read. It makes various parts rather heavy reading and sometimes not easily understood. It is too formal and rigid. In spite of these criticisms there is no effort to belittle the value of this standard textbook in psychiatry and it should be read by all psychiatrists. It is difficult to recommend to students unless their whole course in undergraduate psychiatry is presented as it is at Johns Hopkins University.

Hindu Medicine. *By Henry R. Zimmer, Ph.D., Late Lecturer in Philosophy at Columbia University; formerly Professor of Sanskrit at the University of Heidelberg. Edited with a foreword and preface by Ludwig Edelstein, Ph.D. Cloth. Price, $4. Pp. 203. Johns Hopkins Press, Homewood, Baltimore 18, 1948.*

Hindu medicine attracted the attention of Western scholars at an early period of Indic studies. Prior to Royle's Essay on the Antiquity of Hindoo Medicine (London, 1837), which was the first book on Hindu medical wisdom published in Europe, H. H. Wilson, the great pioneer of Sanskrit philology, succeeding W. Jones and H. T. Colebrook, introduced Hindu medicine through an essay "On the Medical and Surgical Science of the Hindus" in 1823. During the intervening century Western and Hindu scholars in turn edited and translated the main texts of Hindu medical tradition. There is an outstanding monograph by Julius Jolly, "Indische Medezin" which treats with equal mastery both the philological and medical aspects of the subject. The present volume owes its origin to the seventh course of lectures on the foundation of the Hideyo Noguchi Lectureship at the Johns Hopkins Institute of the History of Medicine.

There are many observations that will interest students of this series. One of the many is: "All diseases are the sons of Death, who in Hindu mythology is a female figure. Her daughter is Decrepitude. Among the other means for warding off this powerful daughter of Mother Death, Puranic popular medicine prescribes occasional intercourse with a young girl, regularity in diet, anointing the head and the soles of the feet with oil, covering the body with cooling sandal paste against the heat of the sun in autumn, warm baths in summer and so forth." These will be of interest to physical therapists.

Standing and Sitting Posture, with Special Reference to the Construction of Chairs. *By Bengt Akerblom. Translated by Ann Synge. Paper. Pp. 187, with 81 illustrations. A.-B. Nordiska Bokhandeln, Stockholm, 1948.*

The information contained in this book was gathered because of the author's desire to find what requirements were necessary for a comfortable chair and one which would prevent unnecessary fatigue and strain. He reports that the medical literature on the subject is inadequate.

Mr. Akerblom made a study of the standing position concerning movements and center of gravity of the joints of the lower extremity and vertebral column. A similar study was made of the sitting posture. He stresses the importance of ligaments which he calls interarcuate in controlling movements of the lumbar spine, particularly in the sitting position.

He concludes from his studies that there are three sitting positions of rest (defined as lack of activity of the sacrospinalis muscles as determined by electromyography). The requirements to be met in the design of chairs are based on these three positions.

Rehabilitation of the Handicapped: A Bibliography, 1940-1946. *By Maya Riviere. In two volumes. Cloth. Price, $10, the set. Pp. 1024. Published by the National Council on Rehabilitation. The Livingston Press, 1790 Broadway, New York 19, 1949.*

The publication of this bibliography is a project of an affiliation of agencies engaged in rehabilitation, the National Council on Rehabilitation, which had its beginning at the Annual Conference of the American Physical Therapy Association in 1942. The work is intended chiefly for the administrator who is in need of a synthesis of the entire subject of rehabilitation and to provide sources of information for further study to workers in all professions allied in the field of rehabilitation. Five thousand entries are included. A brief summary of the material in the reference is given in many instances.

Volume II contains an author index, a general index, an index of publishers and of films relating to rehabilitation, with a summary of their content.

Kinesiology and Applied Anatomy Manual. *By Adelaide L. McGarrett, Ed.M., Associate Professor and Technical Director of Physical Therapy, Boston University, College of Physical Education for Women, Sargent, Cambridge, Massachusetts. Paper. Pp. 153, with 71 sketches. Boston University Press, Boston, Massachusetts, 1948.*

This manual presents, the author states, an outline of the basic information which should be included in a course in kinesiology or applied anatomy for students of physical education and physical therapy. The main portion of the manual consists of diagrammatical sketches of the bones with individual muscles superimposed on each drawing, followed by a brief summary of the general description, origin, insertion, action and nerve supply of each muscle—on the whole a fairly adequate collection of anatomical notes. Other sections of the manual contain a brief review of neurology, osteology, joints and articulations, a study of levers and general principles of movements—too brief to be of much value to the physical therapist. The reviewer feels the section on neurology to be inadequate and inappropriate. Likewise the glossary of terms used to describe movements is inadequate.

A manual devised for two allied but different fields often must favor one background, yet in doing so becomes unsuited for both. This manual is perhaps more suitable to physical education students than to physical therapists. It may, as the author states, serve as an adjunct to material which can be presented more thoroughly during class lectures and laboratory demonstrations, but on the whole is too incomplete to be of great value to the physical therapist.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912, as Amended by the Acts of March 3, 1933, and July 2, 1946

Of THE PHYSICAL THERAPY REVIEW, published monthly at New York, N. Y., for October 1, 1949.

State of New York .....
County of New York ..... } ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Florence Kear, who, having been duly sworn according to law, deposes and says that she is the Business Manager of THE PHYSICAL THERAPY REVIEW and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily, weekly, semiweekly or triweekly newspaper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the act of August 24, 1912, as amended by the acts of March 3, 1933, and July 2, 1946 (section 537, Postal Laws and Regulations), printed on the reverse of this form, to wit:

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FLORENCE KEAR,
Business Manager.

Sworn to and subscribed before me this 27th day of September, 1949.

[SEAL] IRVING KAPLAN,
Notary Public.

Meet Our New Contributors

Eubank, Robert N., 1227 Windsor Ave., Richmond, Virginia. Mr. Eubank has held the following positions: Chief Engineer, Radio Station WBBL, Richmond, 1925-27; Chief Engineer, Radio Station WRVA, Richmond, 1927-38; System Electronic Engineer, Virginia Electric & Power Co., Richmond, 1938-44; Owner-Operator, Electronic Engineering Service Co., Richmond, 1944-46; General Manager, Radio Supply Co., Richmond, 1946-48. At present he is Research Assistant in Physical Medicine, Baruch Center of Physical Medicine, Medical College of Virginia, Richmond. Member: Institute of Radio Engineers since 1930.

Mueller, Emily E., 4363 McPherson Ave., St. Louis 8, Mo. Miss Mueller received her B.S. in Physical Education from the University of Pittsburgh in 1944; her certificate in physical therapy from the U. S. Army (Lawson General Hospital, Atlanta, Ga.) in 1945, and her M.S. Degree in Physical Therapy from the Medical College of Virginia in 1949. She served as a physical therapist in the Army from 1945 to 1948. At present she is Research Assistant, Department of Physical Medicine, Barnes Hospital, Washington University, St. Louis, Missouri. Member: American Physical Therapy Association.

Newman, Max K., M.D., 19 Peterboro St., Detroit, Mich. Doctor Newman received his A.B. and M.D. degrees from the University of Michigan in 1934. At present he is Director, Physical Medicine, Grace Hospital, and Chief of Physical Medicine, North End Clinic, Detroit, Michigan. Member: American Medical Association, American Society of Physical Medicine.

Peters, Joseph P., Episcopal Hospital, Front St. and Lehigh Ave., Philadelphia 25, Pa. Mr. Peters received his B.A. degree from Columbia University in 1941, and spent one year of graduate study at the Department of Sociology, Harvard University, in 1941. He received his M.S. degree from the School of Public Health, Columbia University in 1948. Mr. Peters served as a 1st Lieutenant, Medical Administrative Corps during the war. At present he is Assistant Superintendent of the Episcopal Hospital, Philadelphia. Member: American Hospital Association; nominee of American College of Hospital Administrators.

Summers, Ida M., Route 1, Eden, Alabama. Miss Summers received her B.S. degree from State Teachers College in Livingston, Ala., in 1942; her certificate in physical therapy from Lawson General Hospital, Atlanta, Ga., in 1945, and completed work for her M.S. degree in Physical Therapy at Medical College of Virginia in 1949. She served with the Army as a physical therapist, at Percy Jones General Hospital, Battle Creek, Mich. At present she is with the Alabama Crippled Children's Service. Member: American Physical Therapy Association, American Registry of Physical Therapy Technicians.

Wunderlich, Elsie, 936 Holbrook, Detroit, Mich. Miss Wunderlich received her certificate of physical therapy from Polyclinic Hospital, New York in 1931. At present she is Chief Physical Therapist of North End Clinic, Detroit. Member: American Physical Therapy Association.

Classified WANT-ADS

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It is understood and agreed that the publisher shall have the right to reject or change the wording of any advertisement which in the opinion of the Editorial Board shall not be in agreement with the ethical standing of this publication; the advertiser agreeing that the Editorial Committee shall be the sole and exclusive judge of the acceptance of any advertisement.

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Copy for want-ads must be submitted to the American Physical Therapy Association by the 10th of the month **PRECEDING MONTH OF ISSUE,** namely, September 10th for ads to appear in the October issue. The magazine is published monthly on the 15th of the month.

POSITIONS AVAILABLE

WANTED—PHYSICAL THERAPY CONSULTANT for position on staff of National Health and Welfare agency. Experience in the consultative phase of physical therapy essential. Public speaking ability and knowledge of program organization needed. Must be thoroughly familiar with all types of equipment. Should have experience in the several phases of crippled children's work. Cerebral palsy training desirable. Apply to National Personnel Registry and Employment Service, National Society for Crippled Children and Adults, 11 South La Salle Street, Chicago 3, Illinois.

WANTED—REGISTERED PHYSICAL THERAPIST for position in cerebral palsy treatment center located in college town of 65,000. College enrollment of 6,000 students. If interested in coming to a fast-growing West Texas town, write, wire or telephone: Lubbock Cerebral Palsy Treatment Center, 1317 Tenth Street, Lubbock, Texas.

WANTED—PHYSICAL THERAPIST for 60-bed orthopedic hospital for children. Cerebral palsy training desirable. Hospital located only 6 miles from Atlanta, Ga., approved by the American College of Surgeons. Physical Therapy Department new and beautifully equipped. Apply to Scottish Rite Hospital for Crippled Children, Decatur, Ga.